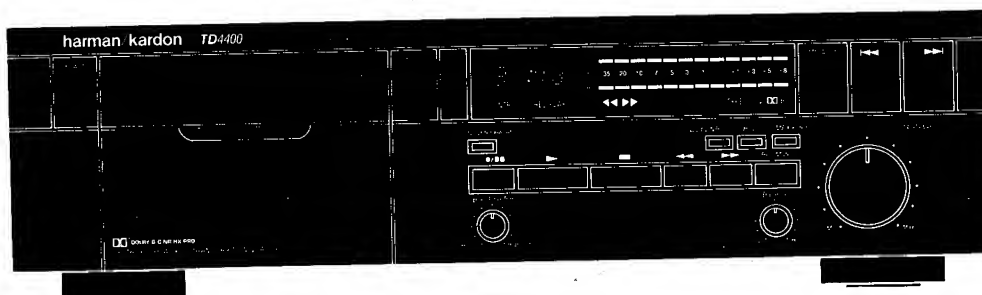


The Harman Kardon Model TD4400

Manual 162A

CD TRANSCRIPTION QUALITY CASSETTE DECK

Technical Manual



The following marks found in the parts list of this manual
Identify the models as follows.

- BK : North America area model Black version
- I : International model
- IB : International model Black version
- BB : Australia model Black version

harman/kardon

240 Crossways Park West, Woodbury, N. Y. 11797
1112-3152162A5 P-119010 2000 Printed in Japan

TD4400

SPECIFICATIONS

	Nominal	Limit
Track Configuration	4-track 2 Channel Stereo Cassette Deck	

• MECHANICAL SECTION

Record/Playback Tape Speed

Drift 4.75cm/sec.

0.2% ± 2.0%

Wow and Flutter

0.045% (NAB) ≤ 0.1%

0.07% (CCIR)

Take Up Torque

50gr.cm 35 ~ 70gr.cm

Back Tension

4gr.cm 2 ~ 6gr.cm

F.FWD Torque

100gr.cm 70 ~ 150gr.cm

REW Torque

100gr.cm 70 ~ 150gr.cm

F.FWD/REW Time

90sec. ≤ 100sec.

(C-60 Tape)

• AMPLIFIER SECTION

Bias Frequency

105kHz ± 5kHz

Playback Output

640mV ± 1.5dB

Signal-to-Noise Ratio

at Line Input

(Input 1kHz, 100mV)

IHF-A WTD at Dolby Level

Dolby NR off

LN 51dB

CrO₂ 54dB

Metal 54dB

Dolby B NR

LN 61dB

CrO₂ 64dB ≥ 60dB

Metal 64dB ≥ 60dB

Dolby C NR

LN 66dB

CrO₂ 70dB ≥ 66dB

Metal 70dB ≥ 66dB

Channel Separation

Nominal 45dB
Limit ≥ 35dB

Crosstalk

Nominal 70dB
Limit ≥ 60dB

Record/Playback Distortion

(Input 1kHz)

LN 0.9% ≤ 2.0%

CrO₂ 1.5% ≤ 3.0%

Metal 1.3% ≤ 2.0%

MPX Filter Attenuation

at 15kHz

0.3dB ≤ 1dB

at 19kHz

35dB ≥ 30dB

Erase Ratio (Input 80Hz)

LN 70dB ≥ 60dB

Metal 61dB ≥ 56dB

Input Sensitivity

(Input 1kHz) at Line Input

45mV 40(min) ~ 100(max) mV

Input Impedance

(Input 1kHz) at Line Input

22kΩ 19(min) ~ 30(max) kΩ

• DIMENSIONS (W x H x D)

17-3/8" x 5" x 12-5/8"

(442 x 126 x 320 mm)

• WEIGHT

11.9lbs (5.4kg)

• POWER SUPPLY

U.S.A. and Canada models

AC120V, 60Hz

International and Australia models

AC220V/240V, 50/60Hz

• POWER CONSUMPTION

U.S.A. and Canada models

16W

International and Australia models

18W

These specifications are service target specs.
Specifications and components are subject to change without notice.
Overall performance will be maintained or improved.

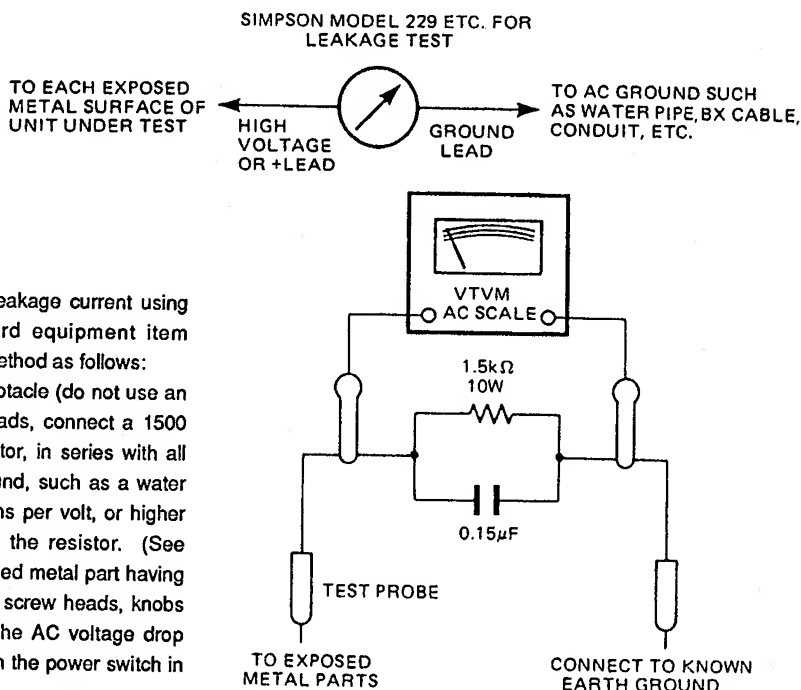
LEAKAGE TEST (FOR SERVICE ENGINEERS IN THE U.S.A.)

Before returning the unit to the user, perform the following safety checks:

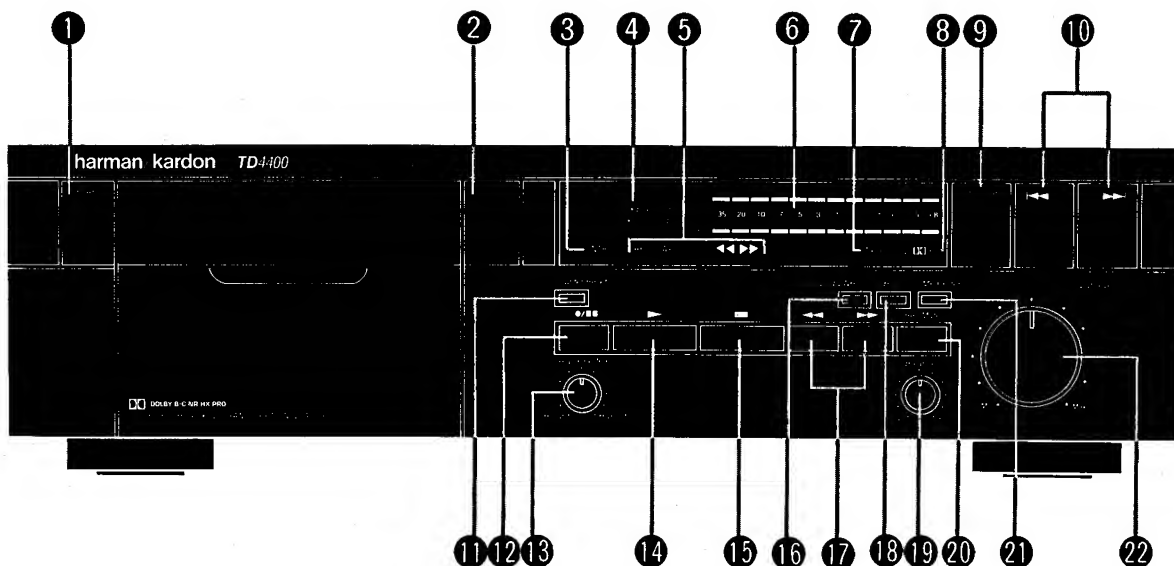
1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the unit.
2. Replace all protective devices such as nonmetallic control knobs, insulating fishpapers, cabinet backs, or shields, isolation resistor-capacitor networks, mechanical insulators, etc.
3. Be sure that no shock hazard exists; check for leakage current using Simpson Model 229 Leakage Tester, standard equipment item No.21641, RCA Model WT540A or use alternate method as follows:

Plug the AC line cord directly into a 120-volt AC receptacle (do not use an Isolation Transformer for this test). Using two clip leads, connect a 1500 ohm, 10-watt resistor paralleled by a 0.15μF capacitor, in series with all exposed metal cabinet parts and a known earth ground, such as a water pipe or conduit. Use a VTVM or VOM with 1000 ohms per volt, or higher sensitivity to measure the AC voltage drop across the resistor. (See Diagram.) Move the resistor connection to each exposed metal part having a return path to the chassis (antenna, metal, cabinet, screw heads, knobs and control shafts, escutcheon, etc.) and measure the AC voltage drop across the resistor. (This test should be performed with the power switch in both the On and Off positions.)

A reading of 0.35 volt RMS or more is excessive and indicates a potential shock hazard which must be corrected before returning the unit to the owner.



CONTROLS AND FUNCTIONS

**1 POWER SWITCH**

Press to turn unit on and off.

2 EJECT

Press to load and remove tape cassette.

3 INTRO

Indicates Intro Scan is engaged.

4 COUNTER

Indicates tape position in minutes and seconds.

5 REC PLAY

Displays operating mode: Record, Play, Rewind or Fast Forward.

6 LEVEL

Shows signal level.

7 TYPE III IV

Automatically indicates type of tape in use.

8 DOLBY B C

Shows if Dolby B or C circuits are on.

9 INTRO SCAN

Previews each segment on a pre-recorded tape.

10 SKIP REVERSE/SKIP FORWARD

Locates the start of any desired segment on a pre-recorded tape.

11 COUNTER RESET

Resets Tape Counter to 00:00.

12 RECORD/PAUSE

Puts cassette deck in Record ready or pause mode.

13 BIAS FINE TRIM

Adjusts bias when recording.

14 PLAY

Begins playback or recording.

15 STOP

Stops tape transport in any mode.

16 DOLBY* NR

Activates Dolby Noise Reduction circuitry for playing or recording tapes.

17 REWIND/FAST FORWARD

Rapidly rewinds or advances tape.

18 B/C

Selects Dolby B or Dolby C Noise Reduction.

19 BALANCE

Adjusts balance between left and right channels when recording.

20 RECORD MUTE

Inserts blank space when recording.

21 MPX FILTER


Press when recording FM stereo broadcasts using Dolby noise reduction.

22 INPUT LEVEL

Adjusts recording level.

*** NOTE**

Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.

"Dolby" and the double-D symbol  are trademarks of Dolby Laboratories Licensing Corporation.

DISASSEMBLY PROCEDURES (REFER TO PAGES 9, 10 AND 11)**[1] CABINET TOP (133) REMOVAL**

Remove 4 screws (A) and 2 screws (B), then remove the Cabinet Top (133).

[2] FRONT PANEL ASSEMBLY (AA) REMOVAL

1. Remove the Cabinet Top (133). (Refer to step 1.)
2. Remove the Plate with window (140 and 143).
3. Disconnect CN801, CN901 and CN902 connected to the Main P. C. Board (PCB-1).
4. Remove 3 Rotary Knobs (147 and 151) and the Nut.
5. Remove 7 screws (C) and then remove the Front Panel Assembly (AA).

[3] CASSETTE TAPE RECORDER MECHANISM ASSEMBLY REMOVAL

1. Remove the Front Panel Assembly (AA). (Refer to step 2.)
2. Disconnect LCN801, LCN802 and LCN803 connected to the Cassette Tape Recorder Mechanism Assembly.
3. Disconnect CN101 and CN301 connected to the Main P. C. Board (PCB-1).
4. Remove the spring (179).
5. Remove 6 screws (D) and then remove the Cassette Tape Recorder Mechanism Assembly.

[4] MAIN P. C. BOARD (PCB-1) REMOVAL

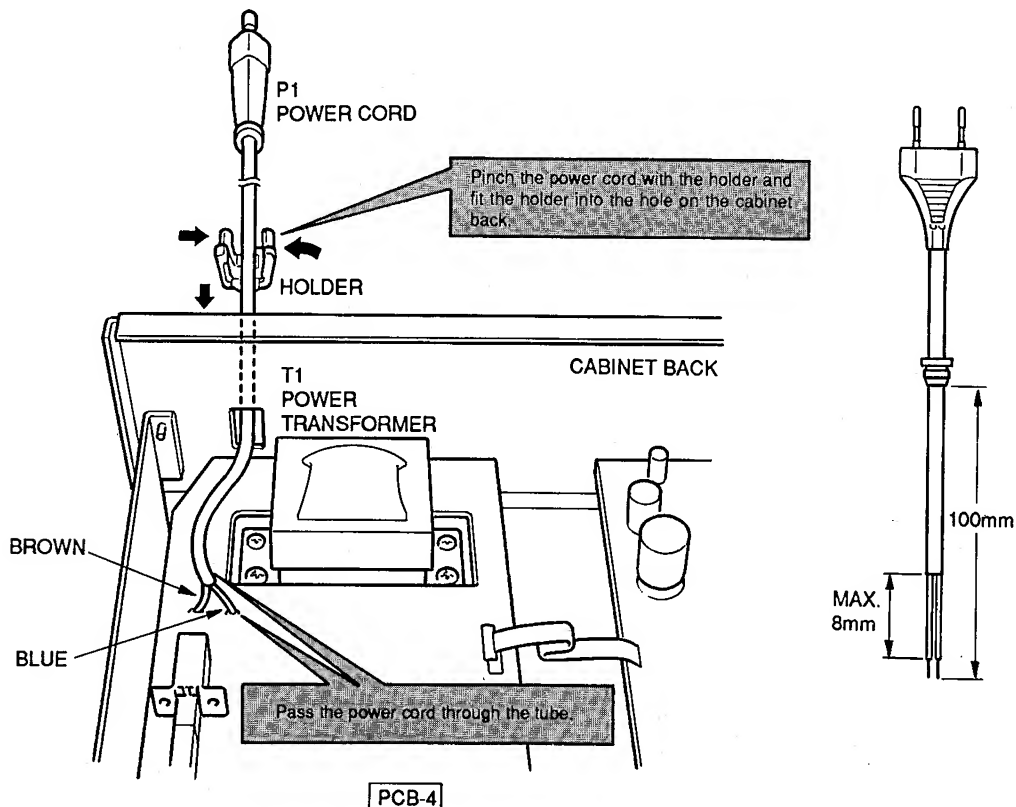
1. Remove the Cabinet Top (133). (Refer to step 1.)
2. Disconnect CN101 and CN301 connected to the Cassette Tape Recorder Mechanism Assembly.
3. Disconnect CN102 and CN103 connected to the Front P. C. Board (PCB-2).
4. Disconnect JL101 connected to the Power P. C. Board (PCB-4).
5. Remove the screw (E) and the metal fitting (164).
6. Disconnect CN501, CN502 and CN503 and then remove the Dolby NR P. C. Board (PCB-3) from the Main P. C. Board (PCB-1).
7. Remove 8 screws (F), then remove the Main P. C. Board (PCB-1).

[5] OTHER P. C. BOARDS REMOVAL

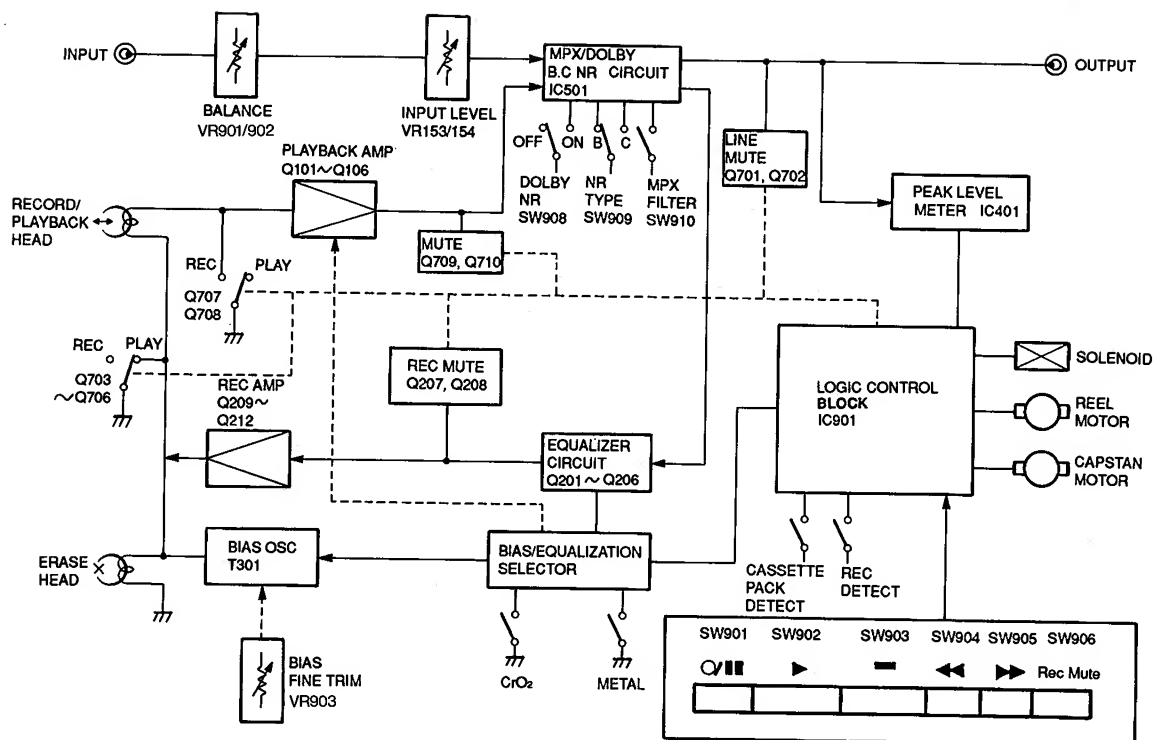
1. Remove the Front Panel Assembly (AA). (Refer to step 2.)
2. Remove 8 screws (G) and 3 screws (H), then remove the Front P. C. Board (PCB-2).
3. Remove 4 screws (I) and then remove the Power P. C. Board (PCB-4). If necessary, disconnect the connector.

POWER CORD REPLACEMENT (FOR SERVICE ENGINEERS OTHER THAN NORTH AMERICA)

In order to prevent fire or shock hazard when replacing the power cord, follow the Procedure below to replace the part with the standard supply parts.



BLOCK DIAGRAM



CIRCUIT DESCRIPTION

PLAYBACK SIGNAL

The signal from the playback head is amplified by the playback amplifier Q101, Q103 and Q105 (L ch.), and is applied to the pins 2 (L ch.) and 29 (R ch.) of the Dolby NR IC501 (B/C type). Switching of the playback signal from the record mode (external input signal) to the playback mode is performed inside IC501. IC501 is usually switched to the playback mode. However, the control signal transmitted to the pin 5 of IC501 from the record mode to the playback mode. The input signal to IC501 is output from the pins 6 (L ch.) and 25 (R ch.) and applied to the OUTPUT jack and the PEAK LEVEL METER circuit. The characteristics of the playback equalizer are defined by the BIAS/EQUALIZATION switch and are selected and specified in Q107 (L ch.) and Q108 (R ch.)

RECORD SIGNAL

The signal from the INPUT jack is controlled by the INPUT LEVEL control and BALANCE control and is applied to pins 1 (L ch.) and 30 (R ch.) of the Dolby NR IC501 (B/C type). Switching of the record signal from the playback mode to the record mode is performed inside IC501. The control signal transmitted to the pin 5 of IC501 from IC901 through Q505 and Q506 switches IC501 from the playback mode to the record mode.

The input signal to the Dolby NR IC is output from pins 3 (L ch.) and 28 (R ch.) of IC501 and passes through the MPX filter. Then it is input to the pins 4 (L ch.) and 27 (R ch.) and is output from the pins 7 (L ch.) and 24 (R ch.). The signal output from IC501 passes through the record equalizer circuit and is amplified by the record amplifier of Q210 and Q212 (L ch.), Q209 and Q211 (R ch.). The amplified signal is then applied to the recording head after being synthesized by a bias signal.

MUTING OPERATION

The signal that mutes the sound produced at switching to recording or playback is applied from IC901 of the logic control block.

When the "STOP" button is pressed, the mute signal output from the pin 28 of IC901 turns ON Q701 (L ch.) and Q702 (R ch.) to short-circuit the output signals of the playback amplifiers for muting. For the purpose of preventing generation of noise at power ON/OFF, the mute signal is output from Q51. The muting is done by short circuiting the output signal with Q701 (L ch.) and Q702 (R ch.) turned ON.

LOGIC FOR RECORD MODE

When the "REC" button is pressed, the pin 27 of IC901 becomes high level and Q709 (L ch.) and Q710 (R ch.) turn ON. The input to the Dolby NR IC is muted. Also Q713 and Q712 turn ON and Q711 turns OFF. Therefore Q703, Q705 (L ch.) and Q704, Q706 (R ch.) turn OFF to release the muting of the outputs from the record amplifiers.

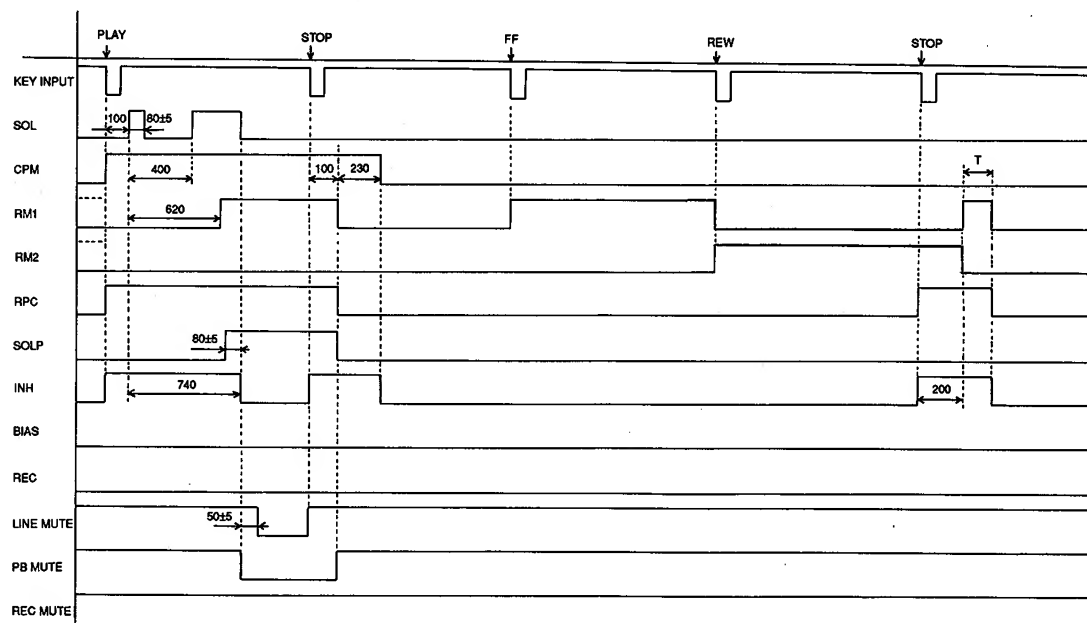
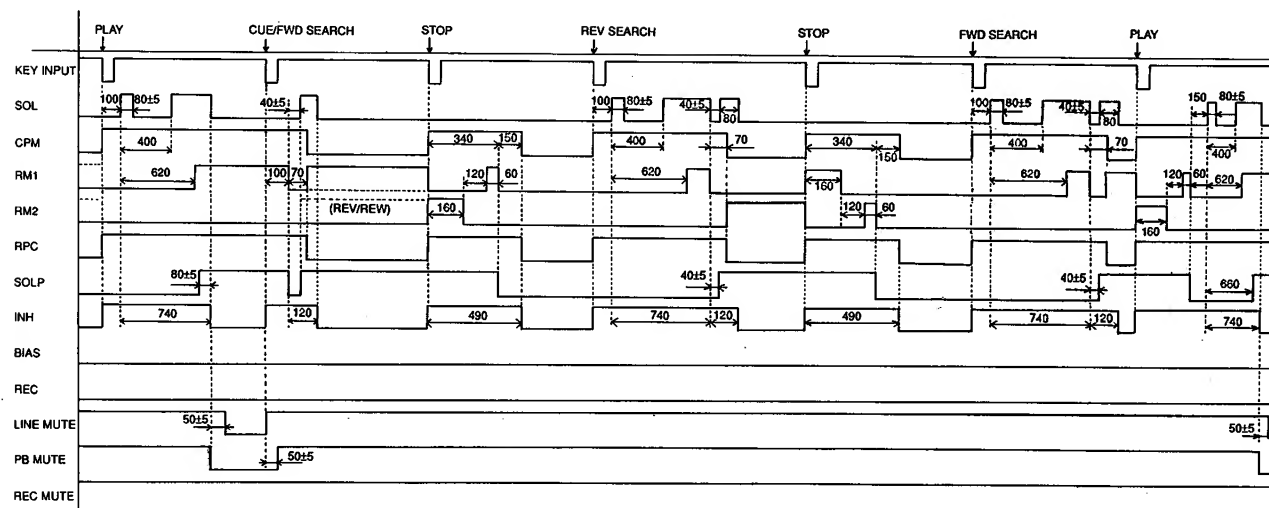
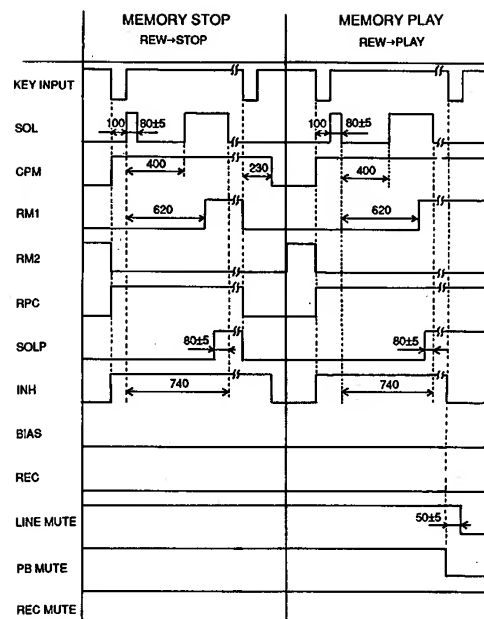
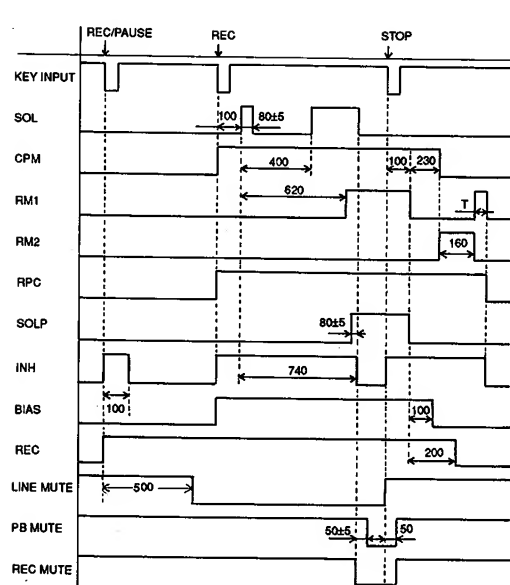
Also, Q505 turns ON and Q506 turns OFF to make the pin 5 of IC501 high level. Therefore the mode is switched to the record mode.

LOGIC FOR RECORD TO PLAYBACK MODE

When the "STOP", "PAUSE" or "PLAY" button is pressed, the pin 26 of IC901 becomes high level. Q215 turns ON and Q208 (L ch.), Q207 (R ch.) turn ON to mute the inputs to the record amplifiers. Also, Q713 and Q714 turn OFF and Q711 turns ON to turn ON Q703, Q705 (L ch.) and Q704, Q706 (R ch.). Therefore the outputs from the record amplifiers are muted.

Also, Q505 turns OFF and Q506 turns ON to make the pin 5 of IC501 low level. Therefore the mode is switched to the playback mode.

TIMING CHART



ALIGNMENT PROCEDURES (REFER TO PAGES 12, 13, 20 AND 21)

■ CASSETTE MECHANISM CONFIRMATION

Make sure to confirm conditions of the cassette mechanism as follows before adjustment.

1. Confirmation of erase prevention function

- The switch should turn ON when a tape with erroneous erase preventive pawl is inserted. (Use a tape which is 0.2mm smaller than the minimum size of 62.9mm or a MAZ-0184-C gauge one.)

2. Confirmation of cassette pack detection function

- The switch should turn ON when a tape is inserted. (Use a tape whose minimum size is 63.5mm or a MAZ-0184-C gauge one.)
- When the switch arm is moved back gradually from the ON position, the switch should turn OFF.

3. Confirmation of eject function

- The cassette compartment opens smoothly and no abnormal noise should be heard while opening and closing.
- The eject lock arm opens smoothly without contacting the chassis and damper.
- The eject button can not be pressed during playback.

4. Confirmation of playback, fast forward and rewind functions

- The torque used in each of the playback, fast forward and rewind modes should be within specification.

Playback	35gr.cm~70gr.cm
FastForward	70gr.cm~150gr.cm
Rewind	70gr.cm~150gr.cm
- No abnormal noise should be heard during operation in any mode. The solenoid switching sound should not be considered as a noise.

5. Confirmation of positions of record/playback head and erase head

- Head height
 - Set the M-300 head gauge.
 - Set the unit in the playback mode and place the adjustment chip on the head gauge as shown in the Fig. 1.
 - The adjustment chip should not contact the tape guide of both record/playback head and erase head.

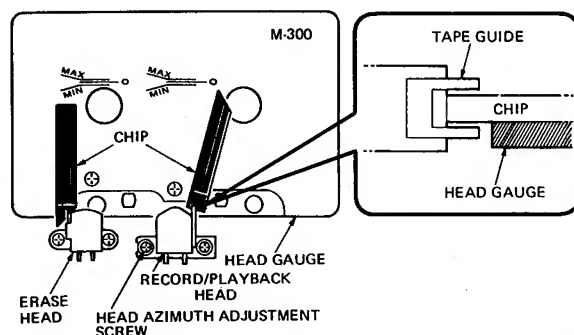


Fig. 1

- Head position
 - Set the M-300 head gauge.
 - Set the unit in the playback mode and place the adjustment chip on the head gauge as shown in the Fig. 2.
 - With both record/playback head and erase head, the adjustment chip should be between MIN and MAX of the M-300 head gauge.

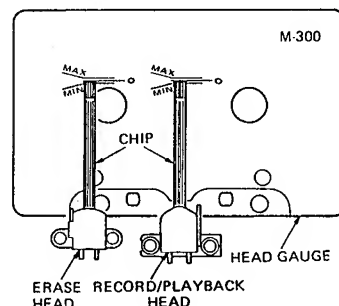


Fig. 2

■ ELECTRICAL ADJUSTMENT AND CONFIRMATION

1. Before adjustment

- Before electrical adjustment, make sure that confirmations of the cassette mechanism are all completed.
- After the power switch is pushed on, wait for 10 minutes before measuring to be sure of the most stable operation.
- Since head magnetization, dust accumulations, etc. are likely to introduce errors in the various characteristics, it is very important that the heads are properly demagnetized and cleaned before commencing any adjustment, particularly frequency response and head azimuth adjustment.

2. Instruments required

- Low frequency oscillator
- AC VTVM or dual channel AC VTVM
- Oscilloscope
- Wow/flutter meter
- Frequency counter
- Distortion meter

3. Test tapes

- Azimuth adjustment MTT-114 or TCC-153
- Tape speed adjustment MTT-111DN or TCC-112
- Playback output level adjustment TCC-130 or MTT-150
- Playback frequency characteristic confirmation TCC-1216 or TCC-162C and TCC-262C
- Music search adjustment SCC-1425
- Reference tapes

LN	SCC-502
CrO ₂	SCC-1360
METAL	SCC-565

Note:

C-90 differs with C-60 in the thickness and bias is of unequal, so adjust with the tape whose bias is of specified value.

4. General conditions (unless otherwise noted)

Controls and Switches	Settings
Dolby NR	Off
Input Level	Maximum
MPX Filter	Off
Bias Fine Trim	Center
Balance	Center

Azimuth Adjustment

When the maximum level point of R channel does not equal that L channel, connect the oscilloscope as shown in Fig. 3 and proceed with azimuth adjustment so that L and R channels are in phase.

- Connect L channel tape out to "X (or V)" and R channel to "Y (or H)". Observe the lissajous waveform.
- Set L and R channels to monaural. Adjust vertical and horizontal gain so that the waveform becomes 45 degree.
- Adjust azimuth so that the measurement of "a" becomes maximum and the measurement of "b" becomes minimum against the 45 degree line.

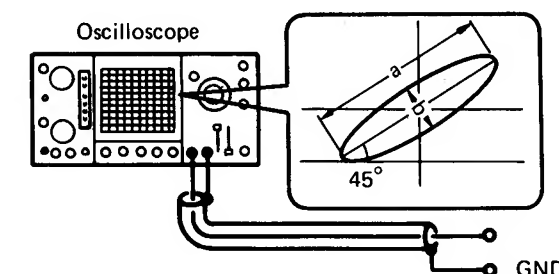
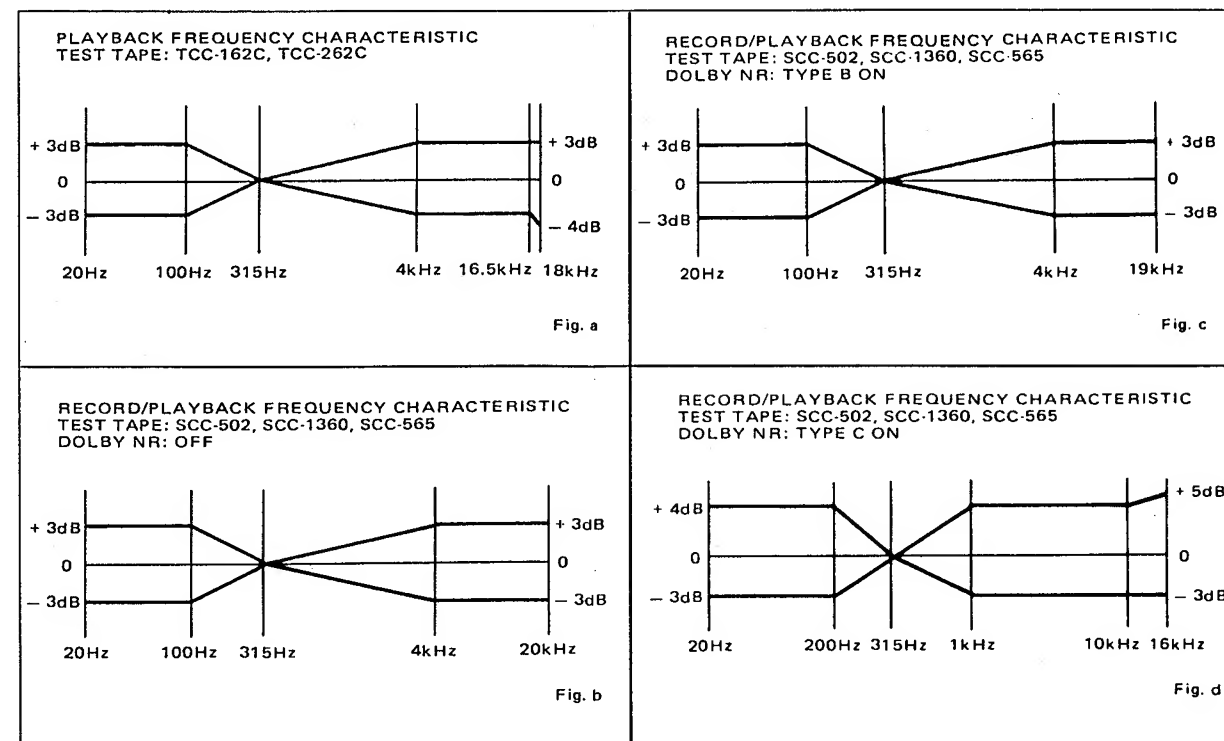


Fig. 3



ALIGNMENT PROCEDURES (REFER TO PAGES 12, 13, 20 AND 21)

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- The torque used in each of the playback, fast forward and rewind modes should be within specification.
 Playback 35gr.cm~70gr.cm
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 Rewind 70gr.cm~150gr.cm
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 - The adjustment chip should not contact the tape guide of both record/playback head and erase head.

- Head position
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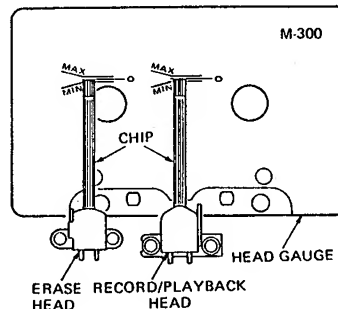


Fig. 2

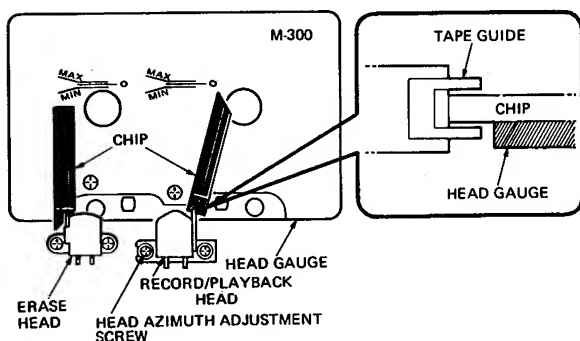


Fig. 1

■ ELECTRICAL ADJUSTMENT AND CONFIRMATION

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- After the power switch is pushed on, wait for 10 minutes before measuring to be sure of the most stable operation.
- Since head magnetization, dust accumulations, etc. are likely to introduce errors in the various characteristics, it is very important that the heads are properly demagnetized and cleaned before commencing any adjustment, particularly frequency response and head azimuth adjustment.

2. Instruments required

- Low frequency oscillator
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- Frequency counter
- Distortion meter

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- Playback frequency characteristic confirmation TCC-1216 or TCC-162C and TCC-262C
- Music search adjustment SCC-1425
- Reference tapes
LN SCC-502
CrO₂ SCC-1360
METAL SCC-565

Note:

C-90 differs with C-60 in the thickness and bias is of unequal, so adjust with the tape whose bias in of specified value.

4. General conditions (unless otherwise noted)

Controls and Switches	Settings
Dolby NR	Off
Input Level	Maximum
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Bias Fine Trim	Center
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Azimuth Adjustment

When the maximum level point of R channel does not equal that L channel, connect the oscilloscope as shown in Fig. 3 and proceed with azimuth adjustment so that L and R channels are in phase.

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- Set L and R channels to monaural. Adjust vertical and horizontal gain so that the waveform becomes 45 degree.
- Adjust azimuth so that the measurement of "a" becomes maximum and the measurement of "b" becomes minimum against the 45 degree line.

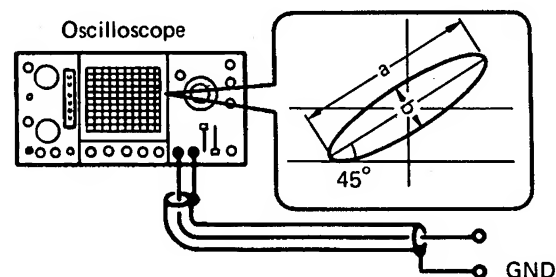
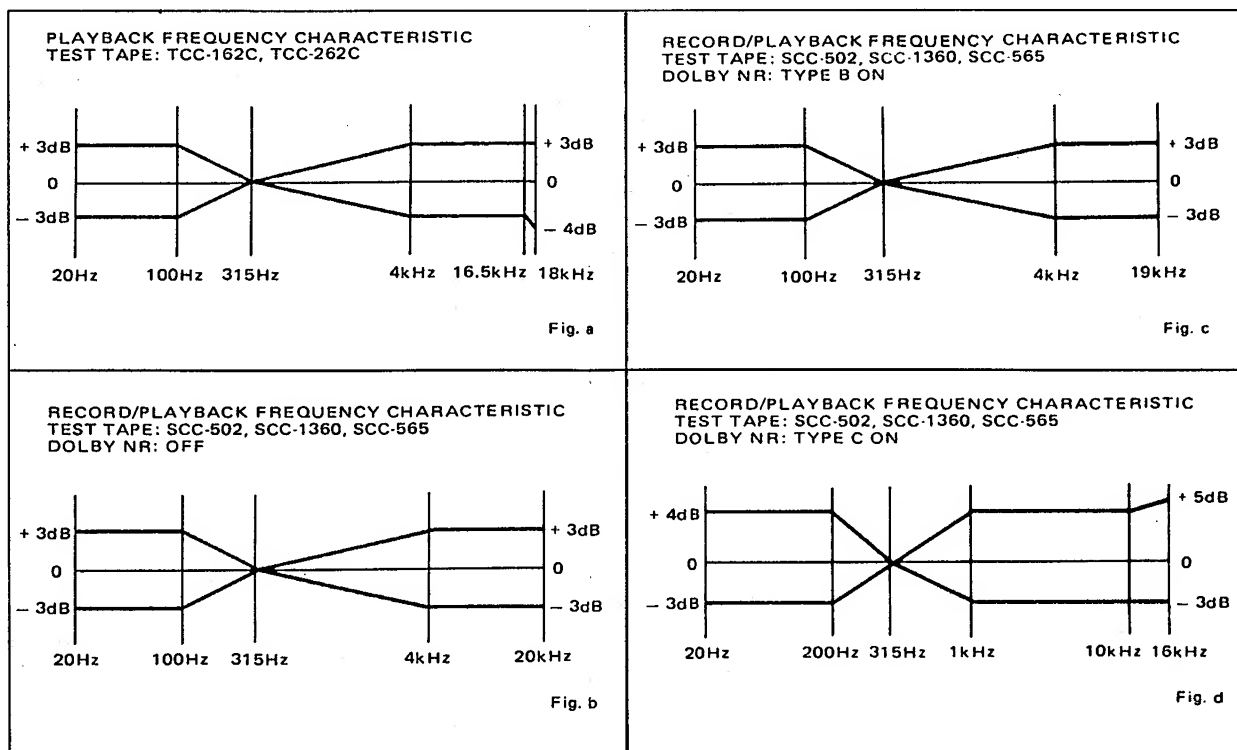
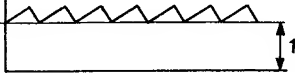
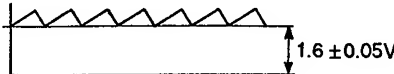


Fig. 3

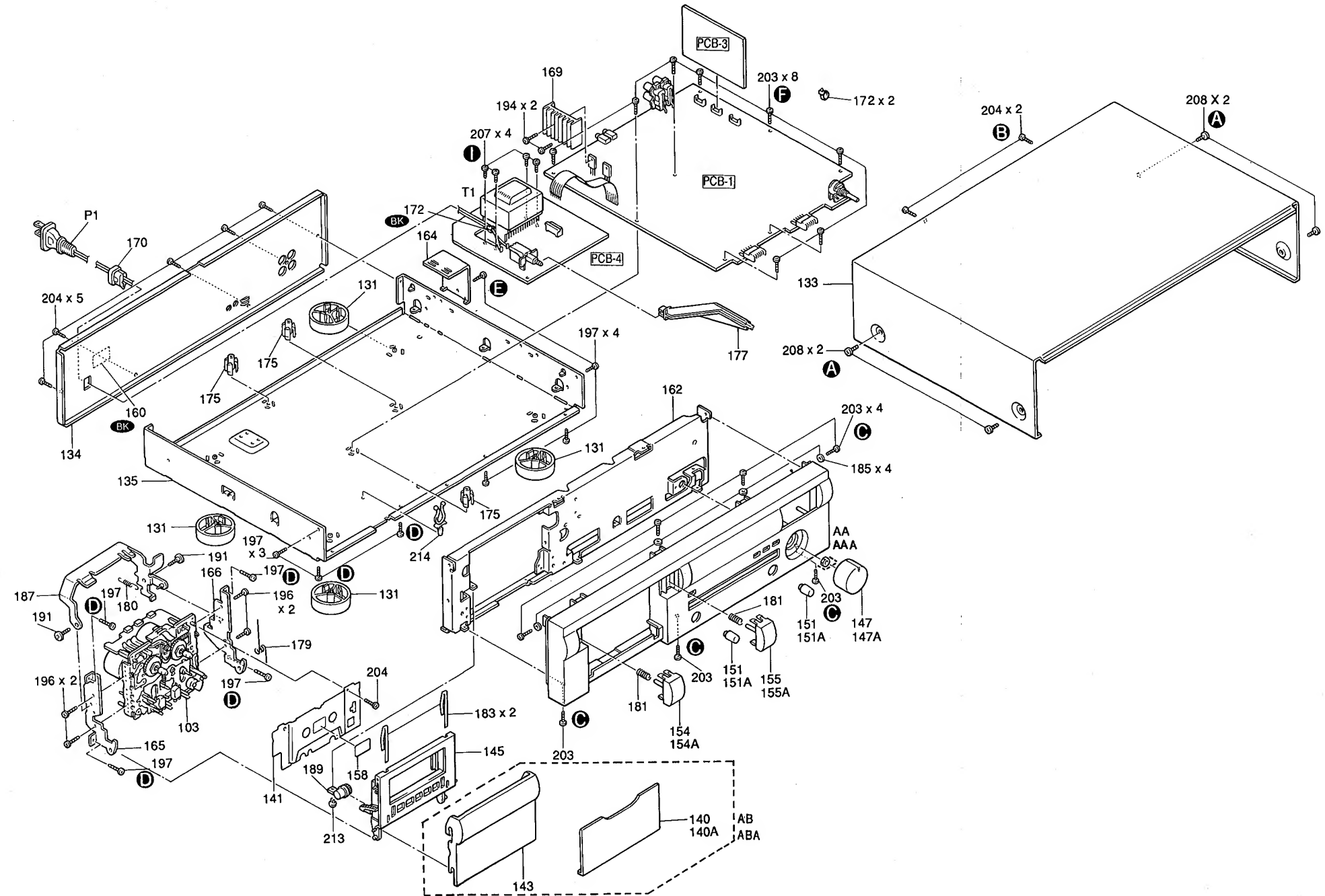
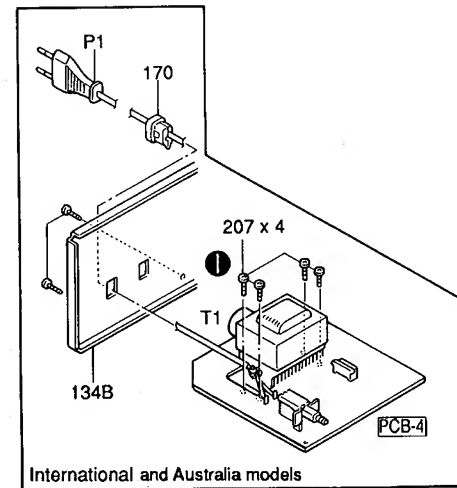


Step	Alignment	Instrument Required	Input Signal	Mode	Test Point	Adjustment	For
1	Azimuth	VTVM Oscilloscope Test tape (MTT-114 or TCC-153)		PB	TP501 (Lch), GND TP502 (Rch), GND or OUTPUT jack	Azimuth screw	Maximum output Refer to "Azimuth Adjustment" on page 7.
2	Tape speed	Frequency counter Test tape (MTT-111DN or TCC-112)		PB	TP501 (Lch), GND TP502 (Rch), GND	VR (built in motor)	3000Hz \pm 10Hz Adjust at the center of test tape.
3	Playback output level	VTVM Test tape (TCC-130 or MTT-150)		PB	TP501 (Lch), GND TP502 (Rch), GND	VR101 (Lch) VR102 (Rch)	775mV Tape selector is LN position.
4	Playback frequency characteristic confirmation	VTVM Test tape (TCC-1216 or TCC-162C and TCC-262C)		PB	TP501 (Lch), GND TP502 (Rch), GND or OUTPUT jack	R129, R130 R131, R132 R133, R134	Unsolder resistors of R129 and R130, R131 and R132, or R133 and R134 so that the frequency response is within the range as shown in Fig. a.
5	Music search	VTVM Oscilloscope Test tape (SCC-1425)		FORWARD SEARCH	TP701, GND	VR751	1.6 \pm 0.05V 
6	Bias frequency confirmation	Frequency counter		REC/PB	TP101 (Lch), GND TP102 (Rch), GND	T301	105kHz \pm 3kHz Tape selector is METAL position.
7	Dolby HX PRO	VTVM		REC/PB Bias Trim High Cut VR301,302 Bias MAX	TP101 (Lch), GND TP102 (Rch), GND	L301 L302	Maximum output Tape selector is METAL position. After adjustment for L301 and L302, set bias fine trim (VR301 and VR302) to the center position.
8	Bias trap	VTVM		REC/PB	TP201 (Rch), GND TP202 (Lch), GND	LC201, LC202 LC203, LC204	Minimum output Tape selector is METAL position.
9	Bias level (pre-adjustment)	VTVM		REC/PB	TP101 (Lch), GND TP102 (Rch), GND	VR301 VR302	85mV Tape selector is METAL position.
						VR305 VR306	55mV Tape selector is CrO ₂ position.
						VR303 VR304	33mV Tape selector is LN position.
10	Record level (pre-adjustment)	VTVM Blank tapes CrO ₂ SCC-1360 METAL SCC-565 LN SCC-502	Apply 1kHz signal to INPUT jack. Set INPUT LEVEL knob so that TP501 and TP502 to GND voltage is 775mV in REC-PAUSE mode.	REC/PB	TP501 (Lch), GND TP502 (Rch), GND	VR201, VR202 VR301, VR302	388mV Tape selector is METAL position. Adjust VR301 and VR302 so that the distortion becomes 1.1%~1.4%
						VR303, VR304 (CrO ₂) VR305, VR306 (LN)	388mV Adjust VR303 and VR304 so that the distortion becomes 1.3% (CrO ₂). Adjust VR305 and VR306 so that the distortion becomes 1.0% (LN). This confirmation should be at each tape selector position.
11	Record/playback equalizer frequency characteristic	VTVM Blank tapes CrO ₂ SCC-1360 METAL SCC-565 LN SCC-502	Apply 1kHz signal to INPUT jack. Set INPUT LEVEL knob so that TP501 and TP502 to GND voltage is 25dB below 775mV in REC-PAUSE mode. Then adjust with a 20Hz to 30kHz sweep signal.	REC/PB	OUTPUT jack	VR303, VR304 L201, L202 (VR301, VR302)	So that the record/playback frequency response is flat (at least within the range in Fig. b). Tape selector is CrO ₂ position.
						VR301 VR302	So that the record/playback frequency response is flat (at least within the range in Fig. b). Tape selector is METAL position.
						VR305, VR306 L201, L202 (VR301, VR302)	So that the record/playback frequency response is flat (at least within the range in Fig. b). Tape selector is LN position.
12	Record level	VTVM Blank tapes CrO ₂ SCC-1360 METAL SCC-565 LN SCC-502	Set INPUT LEVEL knob so that TP501 and TP502 to GND voltage is 775mV in REC-PAUSE mode.	REC/PB	TP501 (Lch), GND TP502 (Rch), GND	VR201 VR202	775mV Perform adjustment using CrO ₂ . Perform checking only for LN and METAL tapes.
13	Meter level	VTVM	Apply 1kHz signal to INPUT jack. Set INPUT LEVEL knob so that TP501 and TP502 to GND voltage is 1.5dB below 775mV.	REC-PAUSE	PEAK LEVEL METER	VR401 VR402	Confirm peak level meter reads: -1 dB.
14	MPX filter characteristic confirmation	VTVM	Apply 19kHz, 15kHz and 1kHz signal to INPUT jack. Set INPUT LEVEL knob so that TP501 and TP502 to GND voltage is 775mV.	REC-PAUSE MPX filter ON	TP501 (Lch), GND TP502 (Rch), GND or OUTPUT jack	LC501 LC502	Adjust for -0.3 dB at 15kHz and >30 dB at 19kHz.
15	Record/playback equalizer frequency characteristic confirmation	VTVM Blank tapes CrO ₂ SCC-1360 METAL SCC-565 LN SCC-502	Apply 1kHz signal to INPUT jack. Set INPUT LEVEL knob so that TP501 and TP502 to GND voltage is 25dB below 775mV in REC-PAUSE mode. Then adjust with a 20Hz to 30kHz sweep signal.	REC/PB	OUTPUT jack		Perform checking with Dolby B and C NR ON at each tape selector position. Confirm the record/playback frequency characteristic is within \pm 3 dB at 20Hz to 20 kHz.

Step	Alignment	Instrument Required	Input Signal	Mode
1	Azimuth	VTVM Oscilloscope Test tape (MTT-114 or TCC-153)		PB
2	Tape speed	Frequency counter Test tape (MTT-111DN or TCC-112)		PB
3	Playback output level	VTVM Test tape (TCC-130 or MTT-150)		PB
4	Playback frequency characteristic confirmation	VTVM Test tape (TCC-1216 or TCC-162C and TCC-262C)		PB
5	Music search	VTVM Oscilloscope Test tape (SCC-1425)		FORWARD SEARCH
6	Bias frequency confirmation	Frequency counter		REC/PAUSE
7	Dolby HX PRO	VTVM		REC/PAUSE Bias Trim High Cut VR301, Bias MA
8	Bias trap	VTVM		REC/PAUSE
9	Bias level (pre-adjustment)	VTVM		REC/PAUSE
10	Record level (pre-adjustment)	VTVM Blank tapes CrO ₂ SCC-1360 METAL SCC-565 LN SCC-502	Apply 1kHz signal to INPUT jack. Set INPUT LEVEL knob so that TP501 and TP502 to GND voltage is 775mV in REC-PAUSE mode.	REC/PAUSE
11	Record/playback equalizer frequency characteristic	VTVM Blank tapes CrO ₂ SCC-1360 METAL SCC-565 LN SCC-502	Apply 1kHz signal to INPUT jack. Set INPUT LEVEL knob so that TP501 and TP502 to GND voltage is 25dB below 775mV in REC-PAUSE mode. Then adjust with a 20Hz to 30kHz sweep signal.	REC/PAUSE
12	Record level	VTVM Blank tapes CrO ₂ SCC-1360 METAL SCC-565 LN SCC-502	Set INPUT LEVEL knob so that TP501 and TP502 to GND voltage is 775mV in REC-PAUSE mode.	REC/PAUSE
13	Meter level	VTVM	Apply 1kHz signal to INPUT jack. Set INPUT LEVEL knob so that TP501 and TP502 to GND voltage is 1.5dB below 775mV.	REC-PAUSE
14	MPX filter characteristic confirmation	VTVM	Apply 19kHz, 15kHz and 1kHz signal to INPUT jack. Set INPUT LEVEL knob so that TP501 and TP502 to GND voltage is 775mV.	REC-PAUSE MPX filter ON
15	Record/playback equalizer frequency characteristic confirmation	VTVM Blank tapes CrO ₂ SCC-1360 METAL SCC-565 LN SCC-502	Apply 1kHz signal to INPUT jack. Set INPUT LEVEL knob so that TP501 and TP502 to GND voltage is 25dB below 775mV in REC-PAUSE mode. Then adjust with a 20Hz to 30kHz sweep signal.	REC/PAUSE

Mode	Test Point	Adjustment	For
PB	TP501 (Lch), GND TP502 (Rch), GND or OUTPUT jack	Azimuth screw	Maximum output Refer to "Azimuth Adjustment" on page 7.
PB	TP501 (Lch), GND TP502 (Rch), GND	VR (built in motor)	3000Hz \pm 10Hz Adjust at the center of test tape.
PB	TP501 (Lch), GND TP502 (Rch), GND	VR101 (Lch) VR102 (Rch)	775mV Tape selector is LN position.
PB	TP501 (Lch), GND TP502 (Rch), GND or OUTPUT jack	R129, R130 R131, R132 R133, R134	Unsolder resistors of R129 and R130, R131 and R132, or R133 and R134 so that the frequency response is within the range as shown in Fig. a.
FORWARD SEARCH	TP701, GND	VR751	1.6 \pm 0.05V 
REC/PB	TP101 (Lch), GND TP102 (Rch), GND	T301	105kHz \pm 3kHz Tape selector is METAL position.
REC/PB Bias Trim High Cut VR301,302 Bias MAX	TP101 (Lch), GND TP102 (Rch), GND	L301 L302	Maximum output Tape selector is METAL position. After adjustment for L301 and L302, set bias fine trim (VR301 and VR302) to the center position.
REC/PB	TP201 (Rch), GND TP202 (Lch), GND	LC201, LC202 LC203, LC204	Minimum output Tape selector is METAL position.
REC/PB	TP101 (Lch), GND TP102 (Rch), GND	VR301 VR302	85mV Tape selector is METAL position.
		VR305 VR306	55mV Tape selector is CrO ₂ position.
		VR303 VR304	33mV Tape selector is LN position.
REC/PB	TP501 (Lch), GND TP502 (Rch), GND	VR201, VR202 VR301, VR302	388mV Tape selector is METAL position. Adjust VR301 and VR302 so that the distortion becomes 1.1%~1.4%
		VR303, VR304 (CrO ₂) VR305, VR306 (LN)	388mV Adjust VR303 and VR304 so that the distortion becomes 1.3% (CrO ₂). Adjust VR305 and VR306 so that the distortion becomes 1.0% (LN). This confirmation should be at each tape selector position.
REC/PB	OUTPUT jack	VR303, VR304 L201, L202 (VR301, VR302)	So that the record/playback frequency response is flat (at least within the range in Fig. b). Tape selector is CrO ₂ position.
		VR301 VR302	So that the record/playback frequency response is flat (at least within the range in Fig. b). Tape selector is METAL position.
		VR305, VR306 L201, L202 (VR301, VR302)	So that the record/playback frequency response is flat (at least within the range in Fig. b). Tape selector is LN position.
REC/PB	TP501 (Lch), GND TP502 (Rch), GND	VR201 VR202	775mV Perform adjustment using CrO ₂ . Perform checking only for LN and METAL tapes.
REC-PAUSE	PEAK LEVEL METER	VR401 VR402	Confirm peak level meter reads: -1 dB.
REC-PAUSE MPX filter ON	TP501 (Lch), GND TP502 (Rch), GND or OUTPUT jack	LC501 LC502	Adjust for -0.3 dB at 15kHz and >30 dB at 19kHz.
REC/PB	OUTPUT jack		Perform checking with Dolby B and C NR ON at each tape selector position. Confirm the record/playback frequency characteristic is within \pm 3 dB at 20Hz to 20 kHz.

GENERAL UNIT EXPLODED VIEW



PARTS LIST

Ref. No.	Part No.	Description
AA	A442-TD4400A	FRONT PANEL ASS'Y I
AAA	A442-TD4400B	FRONT PANEL ASS'Y BK IB BB
AB	A512-TD4400A	PLATE ASS'Y I
ABA	A512-TD4400B	PLATE ASS'Y BK IB BB
103	3112-15902	CASSETTE TAPE RECORDER MECHANISM ASSY
131	1319-03301	LEG
133	1414-15901	CABINET, TOP COVER
134	1424-31602	CABINET BACK, REAR BK
134B	1424-31606	CABINET BACK, REAR I IB BB
135	1424-31701	CABINET BACK, BOTTOM
140	1512-06806	PLATE I
140A	1512-06802	PLATE BK IB BB
141	1514-23201	PLATE
143	1532-19501	WINDOW
145	1612-07401	CASSETTE LID

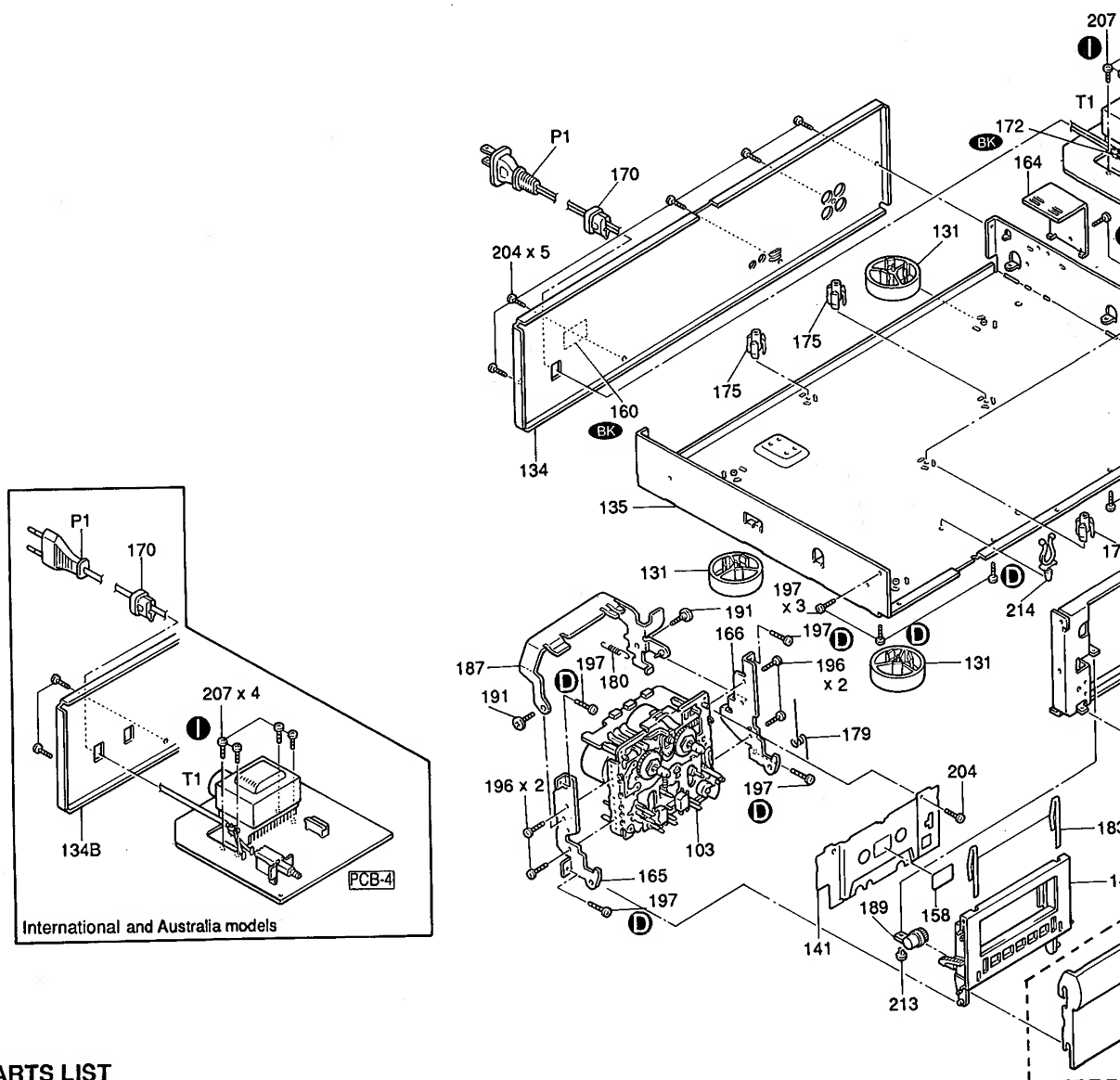
Ref. No.	Part No.	Description
147	1630-04302	ROTARY KNOB I
147A	1630-04301	ROTARY KNOB BK IB BB
151	1632-20402	ROTARY KNOB I
151A	1632-20401	ROTARY KNOB BK IB BB
154	1662-58403	PUSH BUTTON I
154A	1662-58401	PUSH BUTTON BK IB BB
155	1662-58404	PUSH BUTTON I
155A	1662-58402	PUSH BUTTON BK IB BB
158	1741-01601	ORNAMENT
160	1756-CSA	LABEL BK
162	2211-7311	CHASSIS
164	2219-8285	METAL FITTING
165	2219-8286	METAL FITTING
166	2219-8287	METAL FITTING
169	2222-7281	HEAT SINK

Ref. No.	Part No.	Description
170	2240-364	HOLDER
172	2240-R0101	HOLDER
175	2360-7022	BOSS
177	2601-7192	SHAFT
179	2651-047	SPRING
180	2651-11212	SPRING, LEVER
181	2651-2101732	SPRING
183	2652-105	LEAF SPRING
185	2411-30Z1	WASHER, PLAIN
187	2672-7043	LEVER
189	2692-016	DAMPER
191	2320-044	SCREW
194	2327-R0130082	SCREW (3 x 8mm)
196	2347-260527	SCREW (2.6 x 5mm)
197	2347-R0130062	SCREW (3 x 6mm)

Ref. No.	Part No.	Description
203	2347-R0130082	SCREW (3 x 8mm)
204	2347-R0130084	SCREW (3 x 8mm)
207	2347-R0140062	SCREW (4 x 6mm)
208	2347-R0140064	SCREW (4 x 6mm)
213	2459-3005511	RIVET, PLASTIC
214	2240-7049	HOLDER
△ P1	4161-71151	CORD W/PLUG BK
△ P1	4161-7256	CORD W/PLUG I IB
△ P1	4161-04100	CORD W/PLUG BB
△ T1	5584-S8201	XFORMER, POWER BK
△ T1	5584-S8202	XFORMER, POWER I IB BB

NOTE
SAFETY RELATED COMPONENT. USE ONLY EXACT
REPLACEMENT PART AS SPECIFIED.

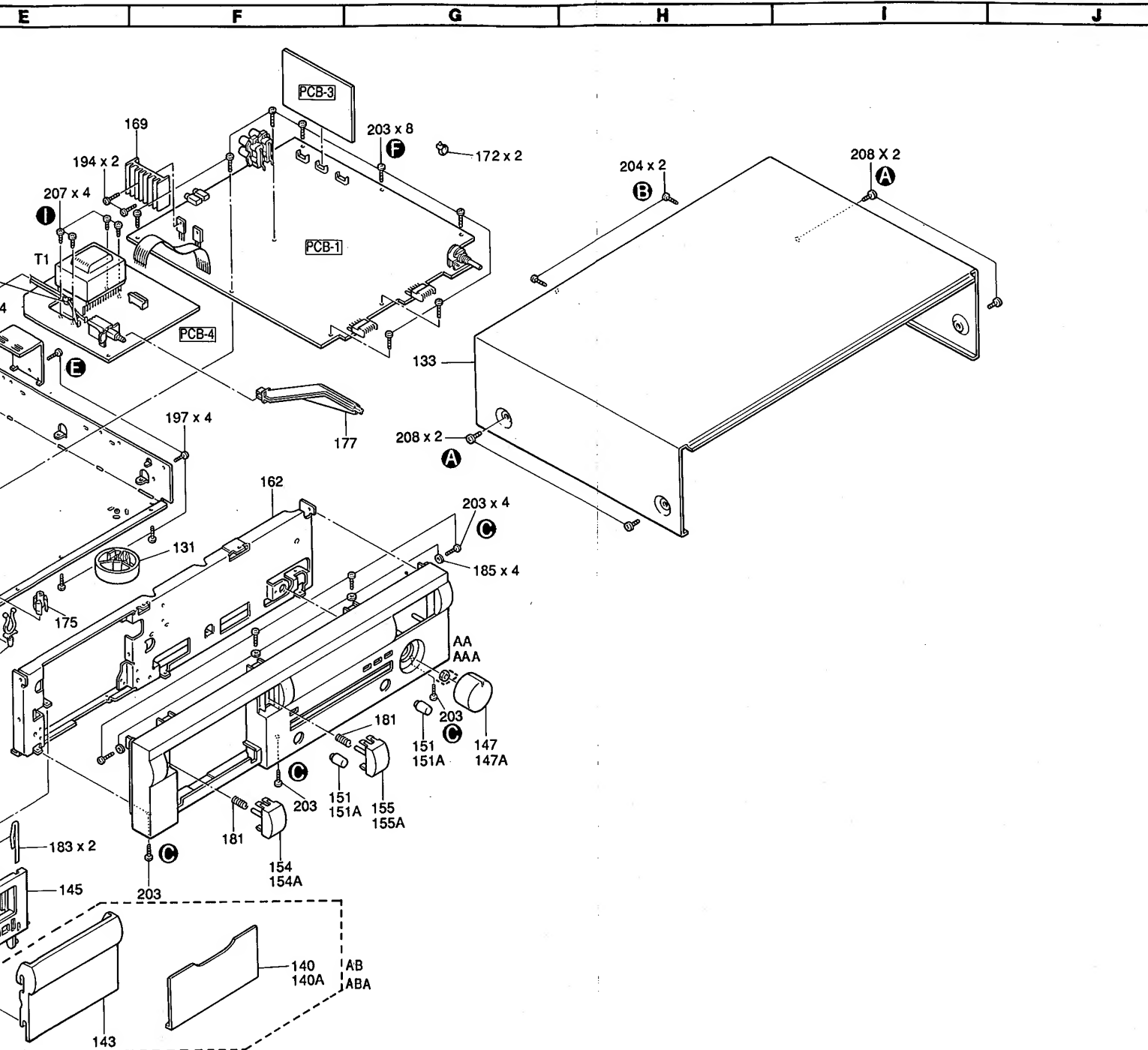
GENERAL UNIT EXPLODED VIEW



PARTS LIST

Ref. No.	Part No.	Description
AA	A442-TD4400A	FRONT PANEL ASS'Y I
AAA	A442-TD4400B	FRONT PANEL ASS'Y BK IB BB
AB	A512-TD4400A	PLATE ASS'Y I
ABA	A512-TD4400B	PLATE ASS'Y BK IB BB
103	3112-15902	CASSETTE TAPE RECORDER MECHANISM ASSY
131	1319-03301	LEG
133	1414-15901	CABINET, TOP COVER
134	1424-31602	CABINET BACK, REAR BK
134B	1424-31606	CABINET BACK, REAR I IB BB
135	1424-31701	CABINET BACK, BOTTOM
140	1512-06806	PLATE I
140A	1512-06802	PLATE BK IB BB
141	1514-23201	PLATE
143	1532-19501	WINDOW
145	1612-07401	CASSETTE LID

Ref. No.	Part No.	Description
147	1630-04302	ROTARY KNOB I
147A	1630-04301	ROTARY KNOB BK IB BB
151	1632-20402	ROTARY KNOB I
151A	1632-20401	ROTARY KNOB BK IB BB
154	1662-58403	PUSH BUTTON I
154A	1662-58401	PUSH BUTTON BK IB BB
155	1662-58404	PUSH BUTTON I
155A	1662-58402	PUSH BUTTON BK IB BB
158	1741-01601	ORNAMENT
160	1756-CSA	LABEL BK
162	2211-7311	CHASSIS
164	2219-8285	METAL FITTING
165	2219-8286	METAL FITTING
166	2219-8287	METAL FITTING
169	2222-7281	HEAT SINK



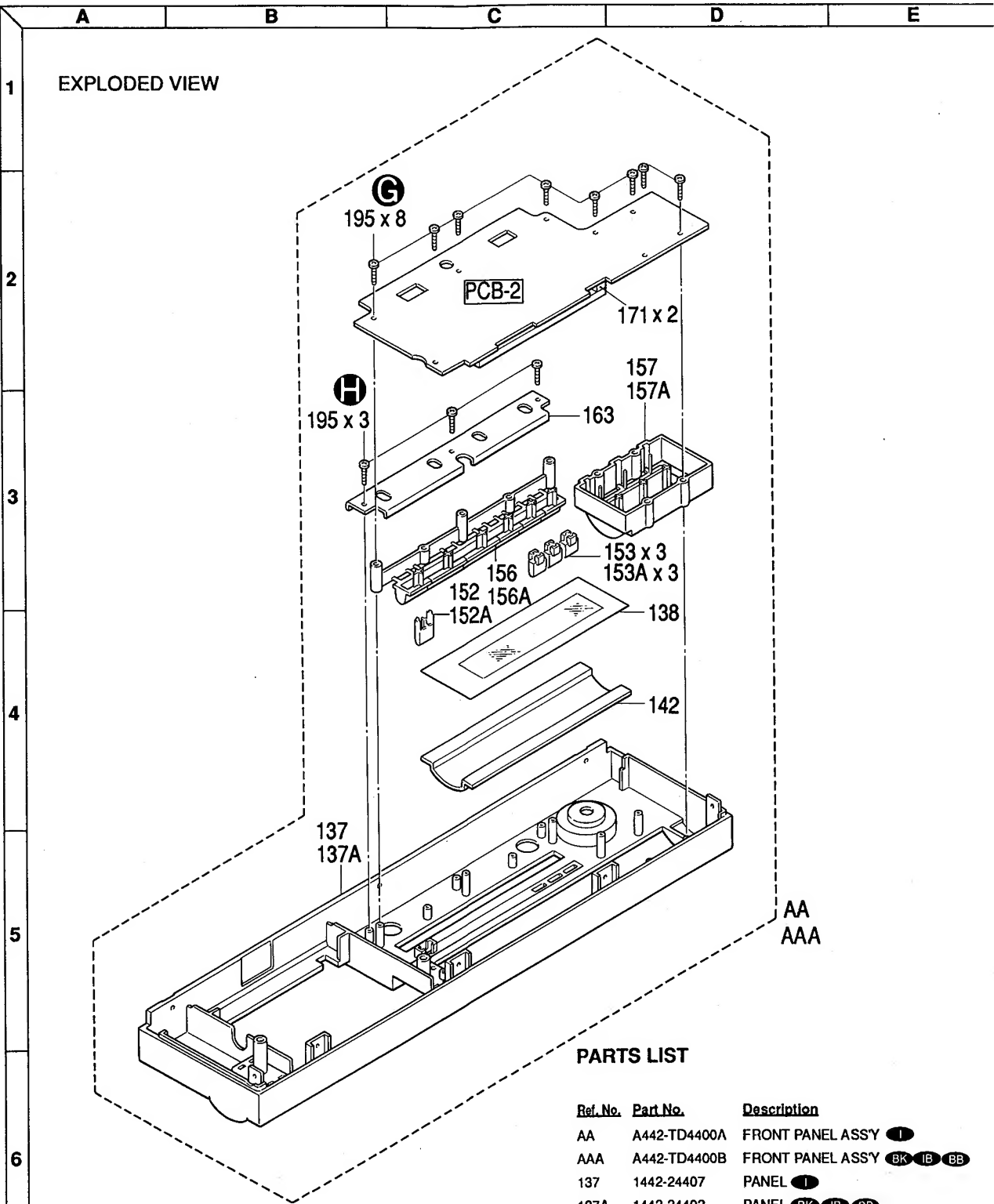
Ref. No.	Part No.	Description
170	2240-364	HOLDER
172	2240-R0101	HOLDER
175	2360-7022	BOSS
177	2601-7192	SHAFT
179	2651-047	SPRING
180	2651-11212	SPRING, LEVER
181	2651-2101732	SPRING
183	2652-105	LEAF SPRING
185	2411-30Z1	WASHER, PLAIN
187	2672-7043	LEVER
189	2692-016	DAMPER
191	2320-044	SCREW
194	2327-R0130082	SCREW (3 x 8mm)
196	2347-260527	SCREW (2.6 x 5mm)
197	2347-R0130062	SCREW (3 x 6mm)

Ref. No.	Part No.	Description
203	2347-R0130082	SCREW (3 x 8mm)
204	2347-R0130084	SCREW (3 x 8mm)
207	2347-R0140062	SCREW (4 x 6mm)
208	2347-R0140064	SCREW (4 x 6mm)
213	2459-3005511	RIVET, PLASTIC
214	2240-7049	HOLDER
△ P1	4161-71151	CORD W/PLUG BK
△ P1	4161-7256	CORD W/PLUG I IB
△ P1	4161-04100	CORD W/PLUG BB
△ T1	5584-S8201	XFORMER, POWER BK
△ T1	5584-S8202	XFORMER, POWER I IB BB

NOTE

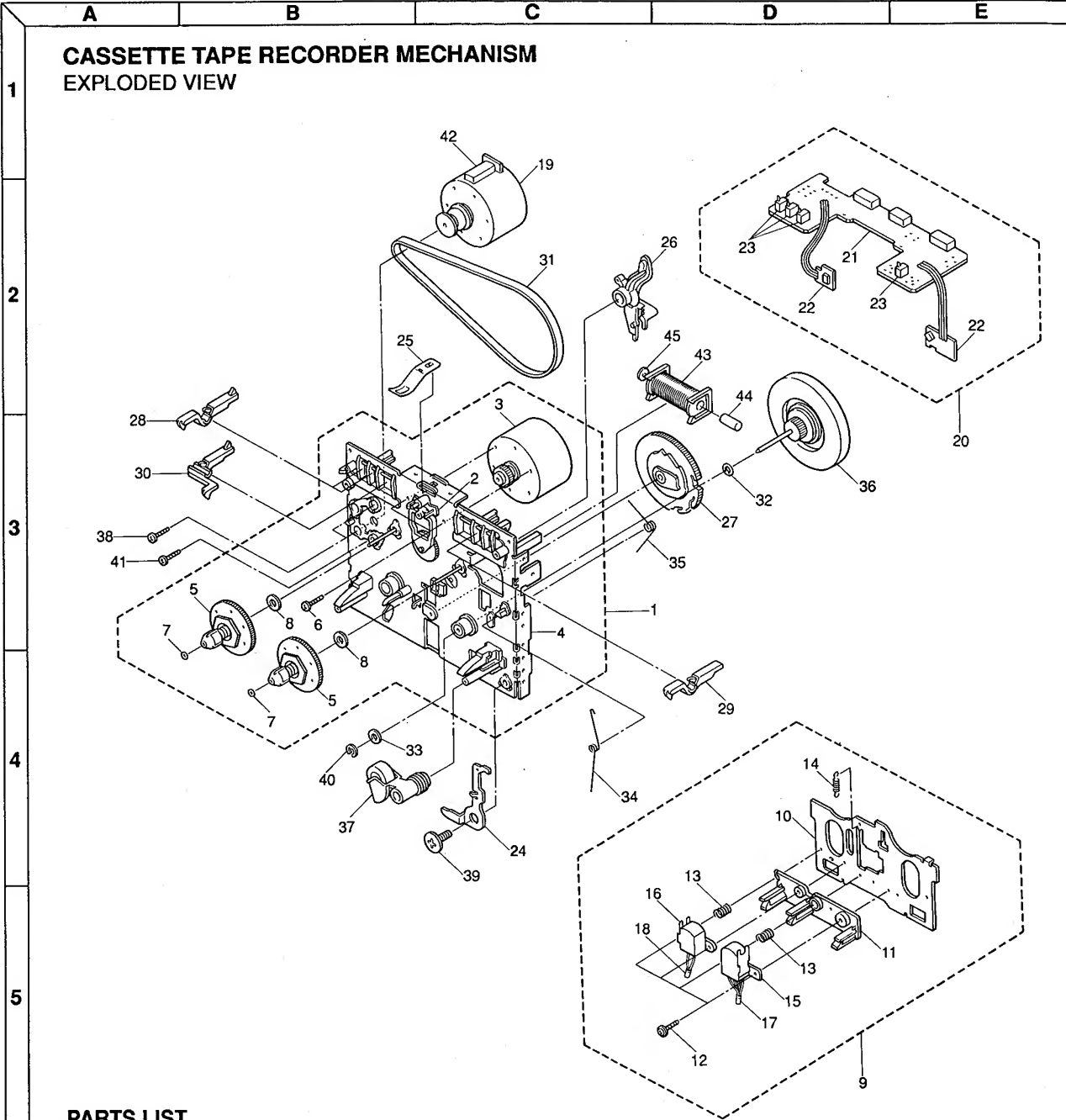


SAFETY RELATED COMPONENT. USE ONLY EXACT REPLACEMENT PART AS SPECIFIED.



PARTS LIST

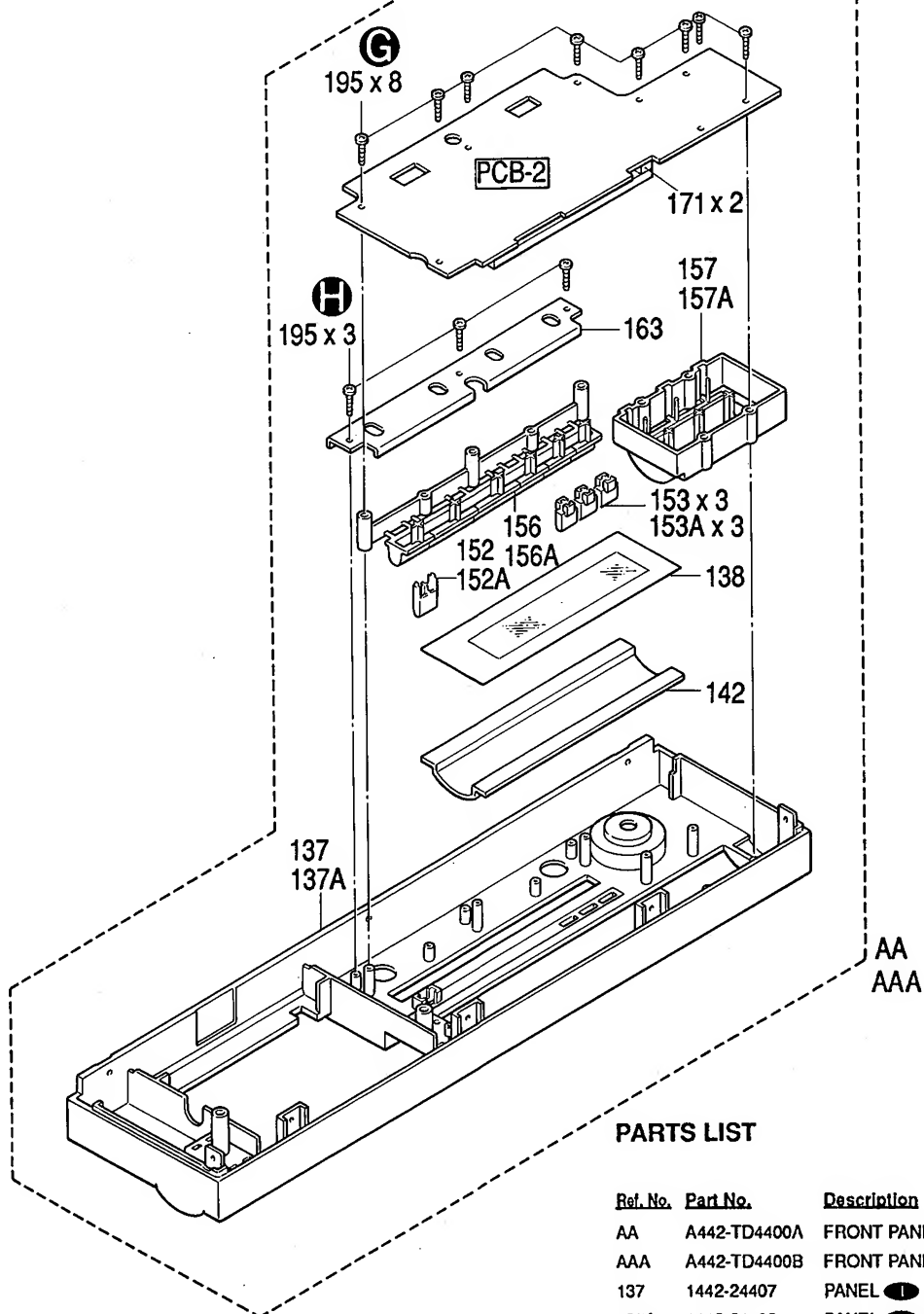
Ref. No.	Part No.	Description
AA	A442-TD4400A	FRONT PANEL ASSY I
AAA	A442-TD4400B	FRONT PANEL ASSY BK IB BB
137	1442-24407	PANEL I
137A	1442-24402	PANEL BK IB BB
138	1511-19806	PLATE
142	1532-17504	WINDOW
152	1662-36303	PUSH BUTTON I
152A	1662-36301	PUSH BUTTON BK IB BB
153	1662-52303	PUSH BUTTON I
153A	1662-52301	PUSH BUTTON BK IB BB
156	1662-58502	PUSH BUTTON I
156A	1662-58501	PUSH BUTTON BK IB BB
157	1662-51904	PUSH BUTTON I
157A	1662-51903	PUSH BUTTON BK IB BB
163	2219-8284	METAL FITTING
171	2240-7370	HOLDER
195	2347-R0126082	SCREW (2.6 x 8mm)



PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	F511-486	CHASSIS ASSY	24	FC39M-68	EJECT PREVENTION ARM
2	F517-049	IDLER ASSY	25	FC52H-12	SPRING, CASSETTE
3	F564-280	REEL MOTOR ASSY	26	FD45G-12	PLAY ARM ASSY
4	F612-169	CHASSIS BASE ASSY	27	FD45B-14	CAM GEAR
5	F623-037	REEL BASE ASSY	28	FD44T-14	SWITCH ARM, REC
6	FG156-11A	SCREW (2.6 x 6.4 mm)	29	FD44Y-12	SWITCH ARM, PACK
7	FJ111-17	NON-METAL WASHER (1.7 x 0.25 mm)	30	FD44V-12	SWITCH ARM, METAL
8	UJ12V-11	NON-METAL WASHER (2.1 x 0.25 mm)	31	FF17W-21	MAIN BELT
9	F513-593	PLATE HEAD ASSY	32	FJ111-30	NON-METAL WASHER (2.6 x 0.25 mm)
10	FC52E-44	HEAD BASE	33	FJ111-14	NON-METAL WASHER (2.6 x 0.5 mm)
11	FD45T-15	HEAD SPACER	34	FK28L-16	EJECT PREVENTION SPRING
12	FG137-18	SCREW (2.0 x 9 mm)	35	FK28R-11	SLIDE SPRING
13	FK21U-11	SPRING, AZIMUTH	36	FR22H-11	FLYWHEEL ASSY
14	FK26N-14	HEAD BASE SPRING	37	FR20L-21A	PINCH ROLLER
15	FU18K-13	REC/PB HEAD	38	FG114-14	SCREW (2.6 x 5 mm)
16	FU192-11	ERASE HEAD	39	UG15S-11A	SCREW (7.7 mm)
17	WH50S-06	WIRE CONNECTOR	40	UG13U-15	E-STOP RING
18	WH42S-00	WIRE CONNECTOR	41	UG12H-16	SCREW (3.0 x 8 mm)
19	F525-269	CAPSTAN MOTOR	42	FF17C-12	HOLDER CUSHION
20	F567-362	RELAY P.C. BOARD ASSY	43	F765-263	SOLENOID ASSY
21	F743-103	RELAY P.C. BOARD	44	FL39H-12A	SHAFT
22	AZ15S-00	LEAF SWITCH	45	FL39K-12	PLUNGER
23	UE16E-11	PUSH SWITCH			

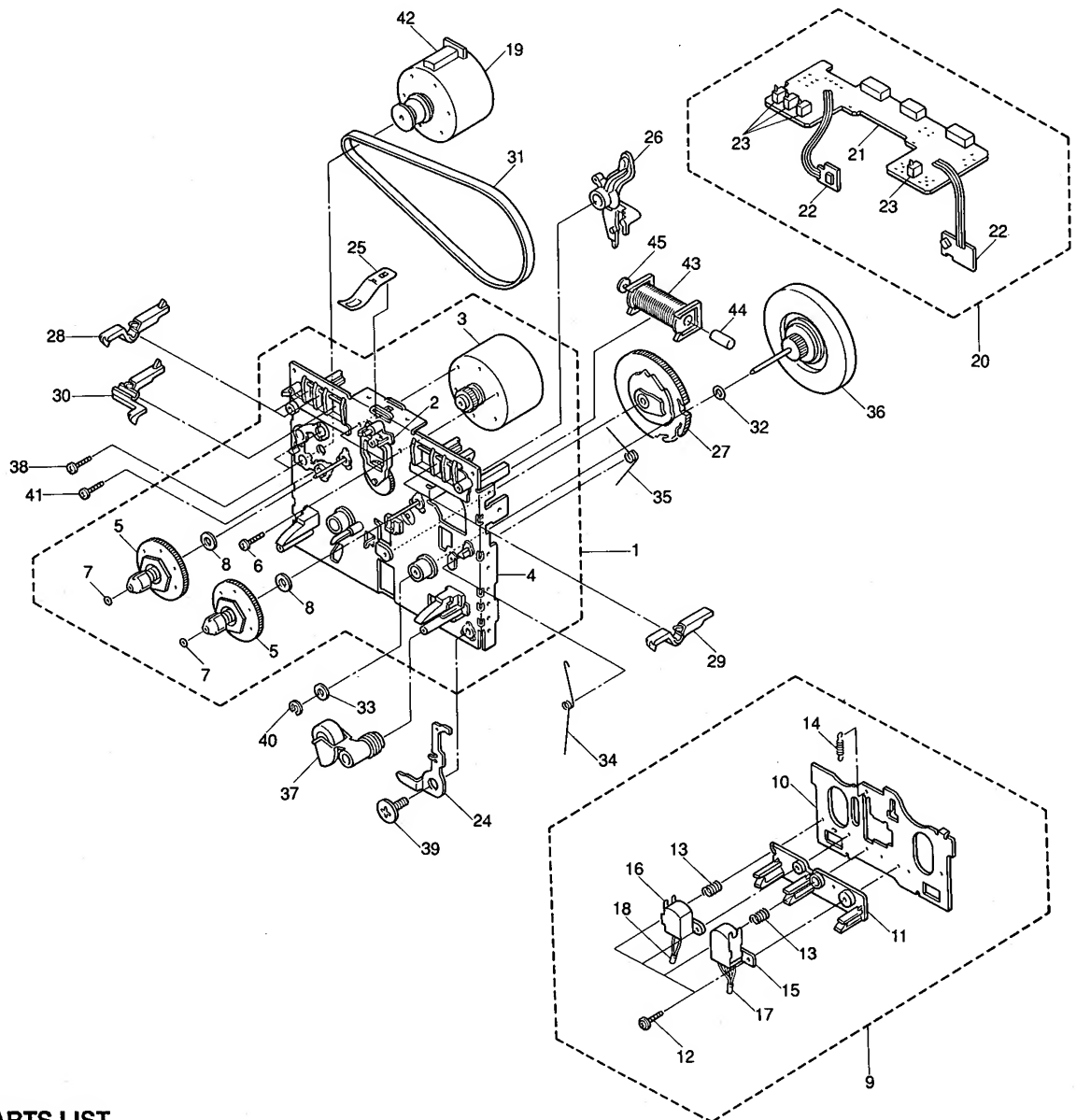
EXPLODED VIEW



PARTS LIST

Ref. No.	Part No.	Description
AA	A442-TD4400A	FRONT PANEL ASSY I
AAA	A442-TD4400B	FRONT PANEL ASSY BK IB BB
137	1442-24407	PANEL I
137A	1442-24402	PANEL BK IB BB
138	1511-19806	PLATE
142	1532-17504	WINDOW
152	1662-36303	PUSH BUTTON I
152A	1662-36301	PUSH BUTTON BK IB BB
153	1662-52303	PUSH BUTTON I
153A	1662-52301	PUSH BUTTON BK IB BB
156	1662-58502	PUSH BUTTON I
156A	1662-58501	PUSH BUTTON BK IB BB
157	1662-51904	PUSH BUTTON I
157A	1662-51903	PUSH BUTTON BK IB BB
163	2219-8284	METAL FITTING
171	2240-7370	HOLDER
195	2347-R0126082	SCREW (2.6 x 8mm)

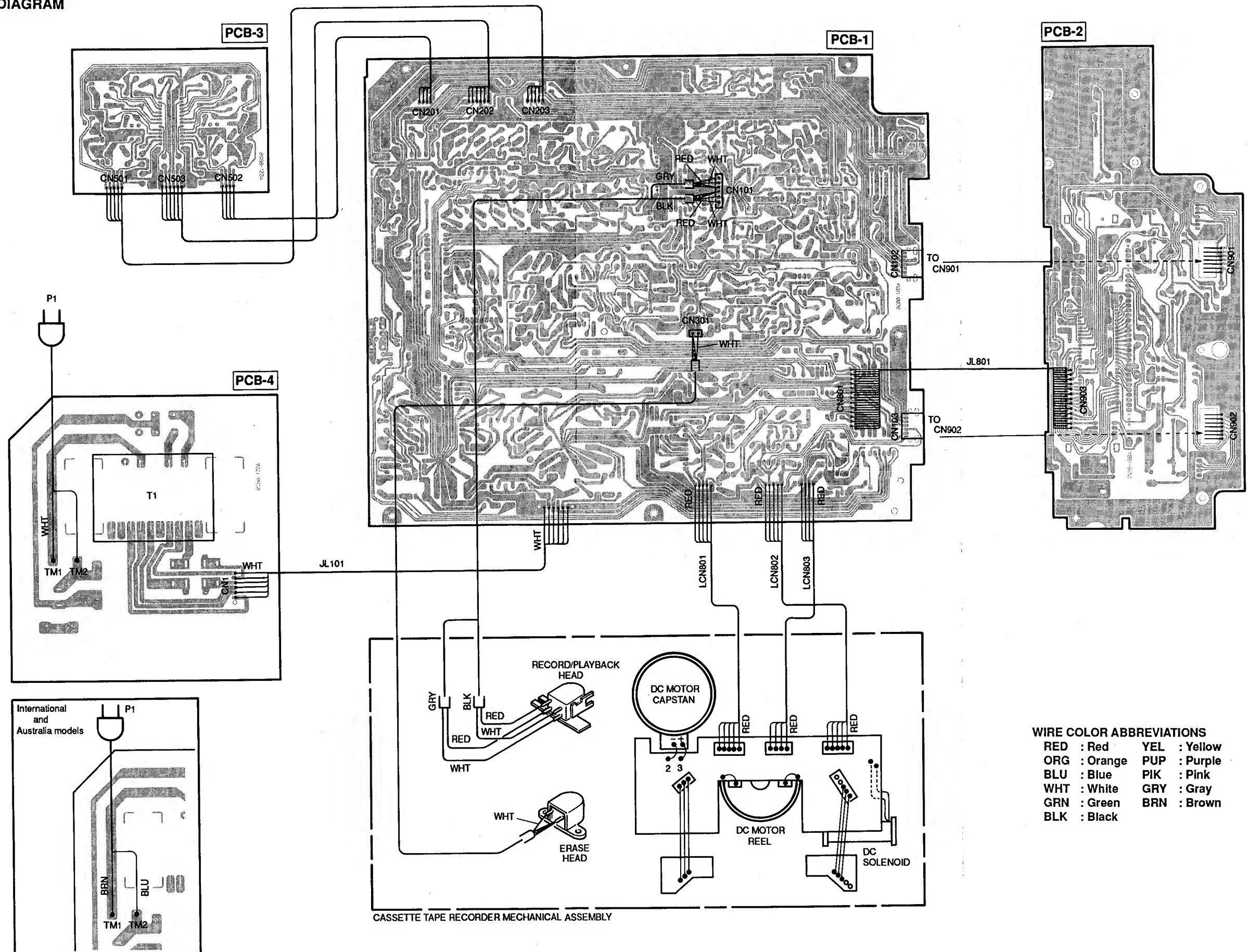
CASSETTE TAPE RECORDER MECHANISM **EXPLODED VIEW**



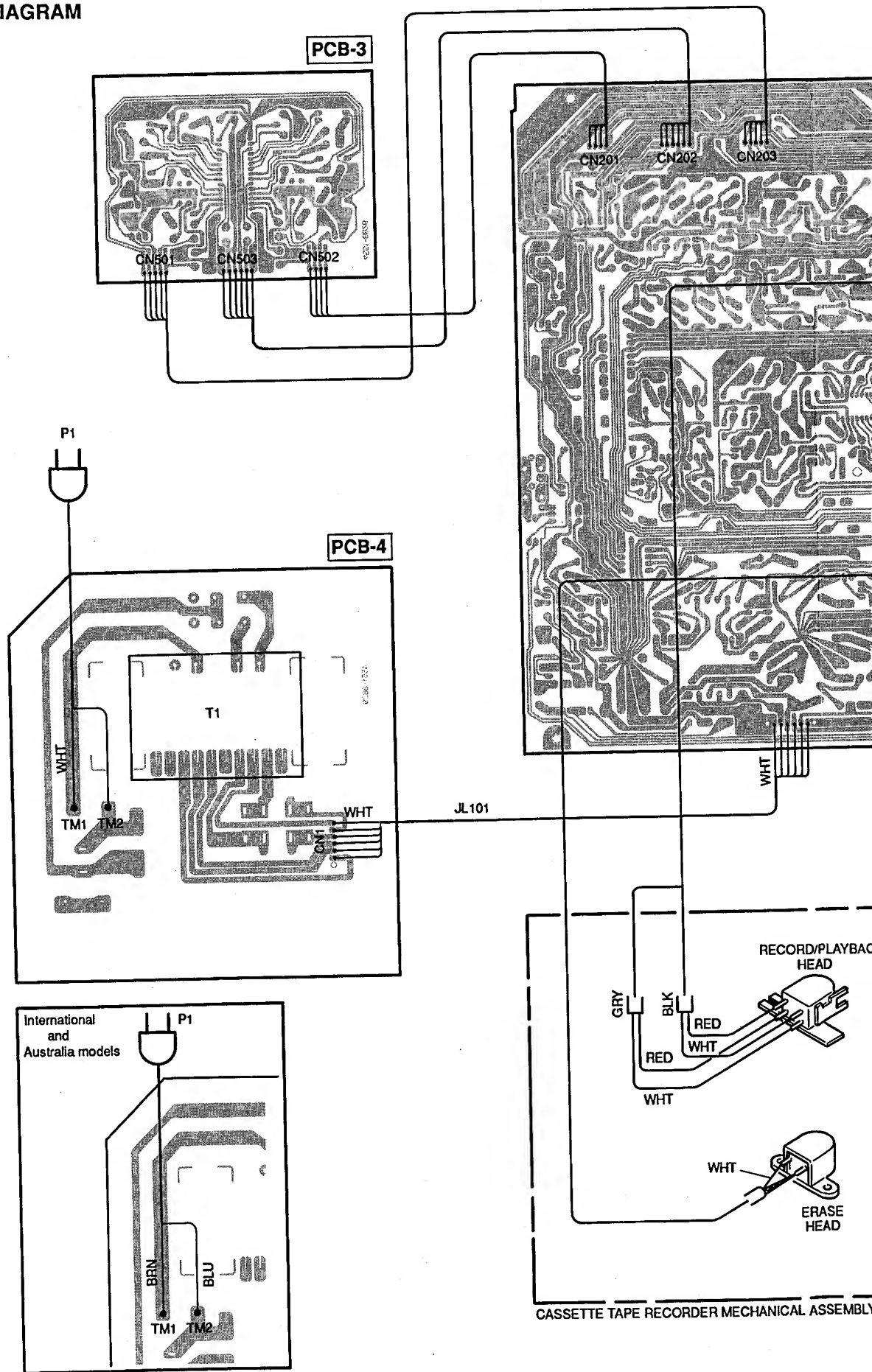
PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	F511-486	CHASSIS ASS'Y	24	FC39M-68	EJECT PREVENTION ARM
2	F517-049	IDLER ASS'Y	25	FC52H-12	SPRING, CASSETTE
3	F564-280	REEL MOTOR ASS'Y	26	FD45G-12	PLAY ARM ASS'Y
4	F612-169	CHASSIS BASE ASS'Y	27	FD45B-14	CAM GEAR
5	F623-037	REEL BASE ASS'Y	28	FD44T-14	SWITCH ARM, REC
6	FG156-11A	SCREW (2.6 x 6.4 mm)	29	FD44Y-12	SWITCH ARM, PACK
7	FJ111-17	NON-METAL WASHER (1.7 x 0.25 mm)	30	FD44V-12	SWITCH ARM, METAL
8	UJ12V-11	NON-METAL WASHER (2.1 x 0.25 mm)	31	FF17W-21	MAIN BELT
9	F513-593	PLATE HEAD ASS'Y	32	FJ111-30	NON-METAL WASHER (2.6 x 0.25 mm)
10	FC52E-44	HEAD BASE	33	FJ111-14	NON-METAL WASHER (2.6 x 0.5 mm)
11	FD45T-15	HEAD SPACER	34	FK28L-16	EJECT PREVENTION SPRING
12	FG137-18	SCREW (2.0 x 9 mm)	35	FK28R-11	SLIDE SPRING
13	FK21U-11	SPRING, AZIMUTH	36	FR22H-11	FLYWHEEL ASS'Y
14	FK26N-14	HEAD BASE SPRING	37	FR20L-21A	PINCH ROLLER
15	FU18K-13	REC/PB HEAD	38	FG114-14	SCREW (2.6 x 5 mm)
16	FU192-11	ERASE HEAD	39	UG15S-11A	SCREW (7.7 mm)
17	WH50S-06	WIRE CONNECTOR	40	UG13U-15	E-STOP RING
18	WH42S-00	WIRE CONNECTOR	41	UG12H-16	SCREW (3.0 x 8 mm)
19	F525-269	CAPSTAN MOTOR	42	FF17C-12	HOLDER CUSHION
20	F567-362	RELAY P.C. BOARD ASS'Y	43	F765-263	SOLENOID ASS'Y
21	F743-103	RELAY P.C. BOARD	44	FL39H-12A	SHAFT
22	AZ15S-00	LEAF SWITCH	45	FL39K-12	PLUNGER
23	UE16E-11	PUSH SWITCH			

WIRING DIAGRAM

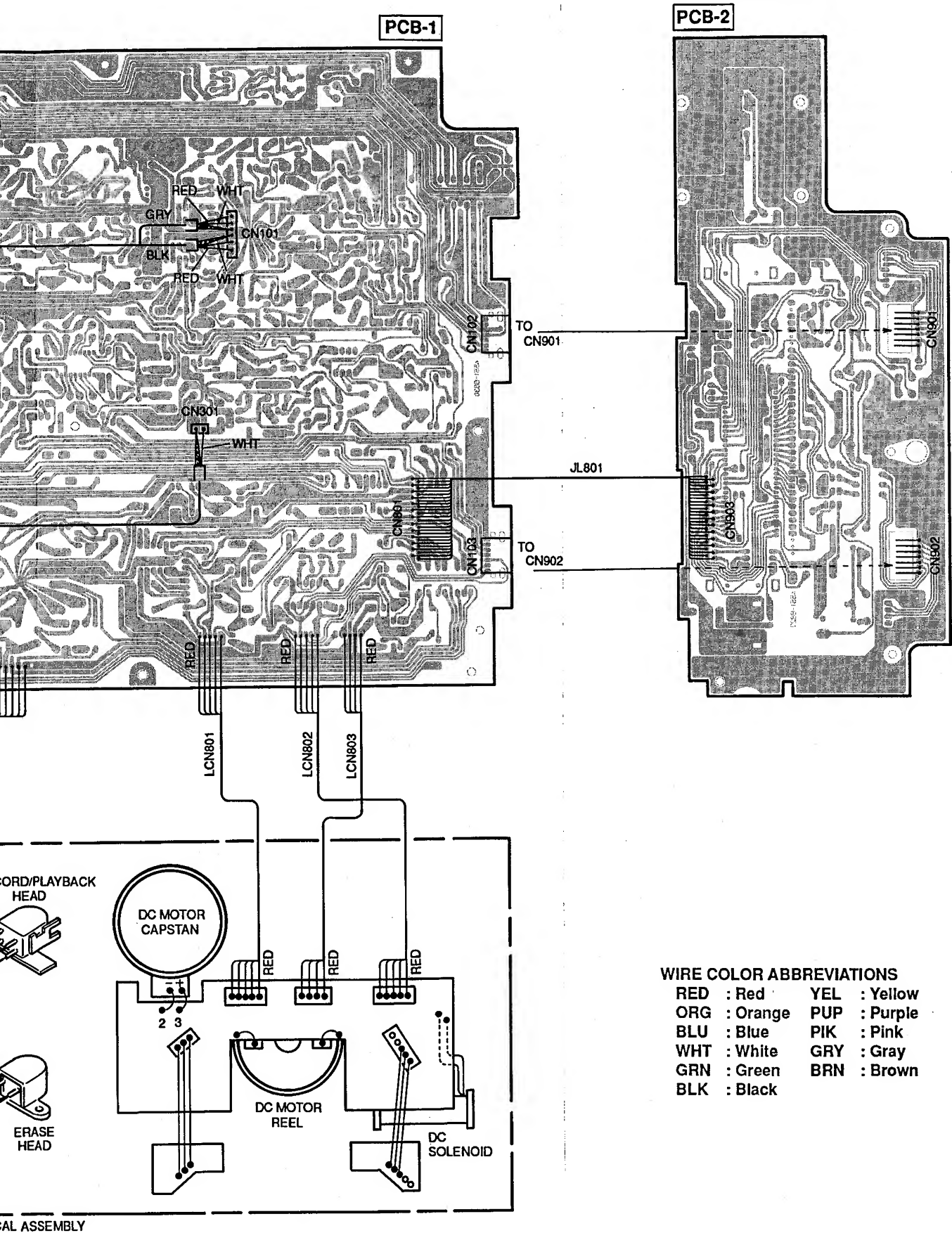


WIRING DIAGRAM



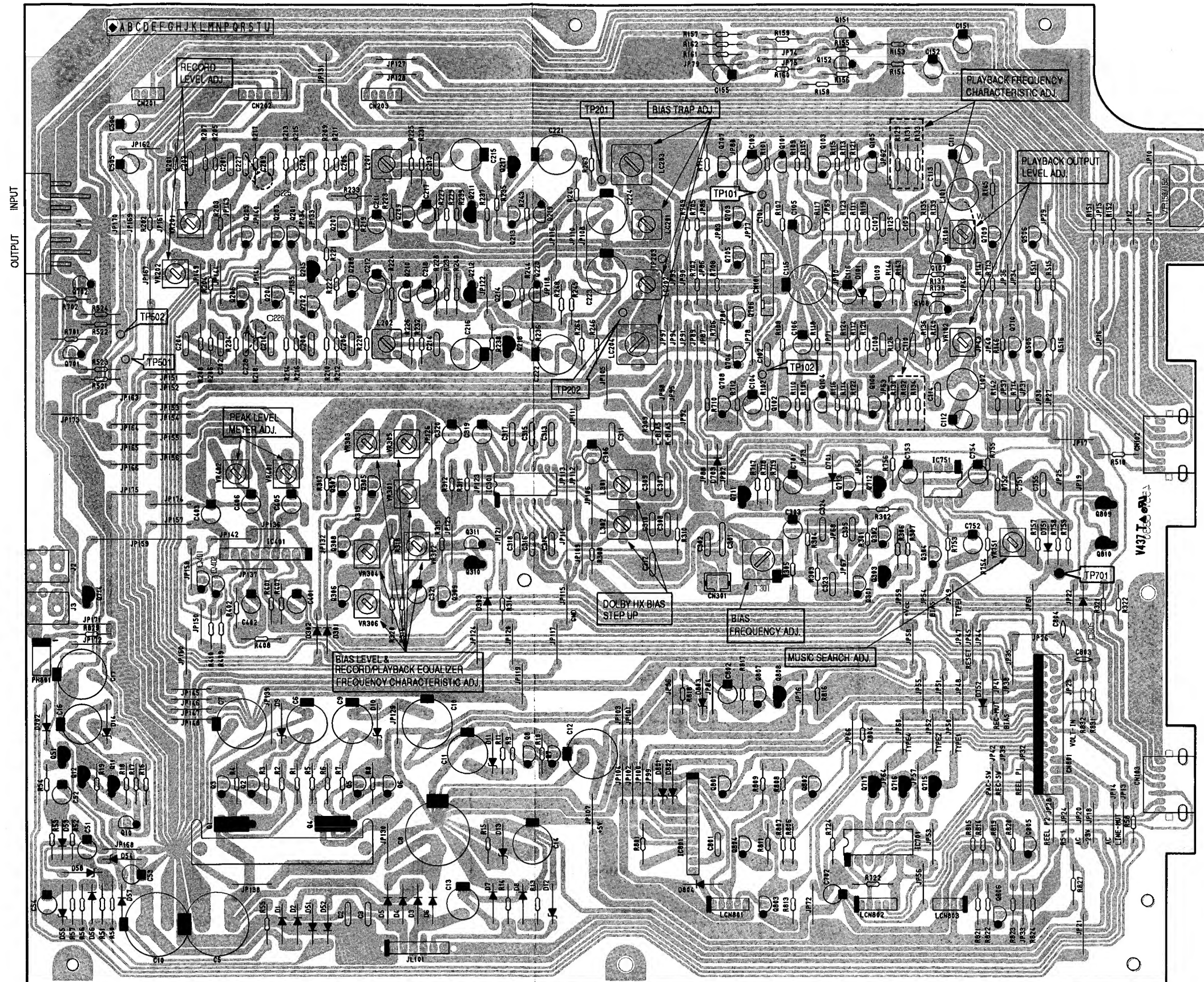
CASSETTE TAPE RECORDER MECHANICAL ASSEMBLY

E F G H I J



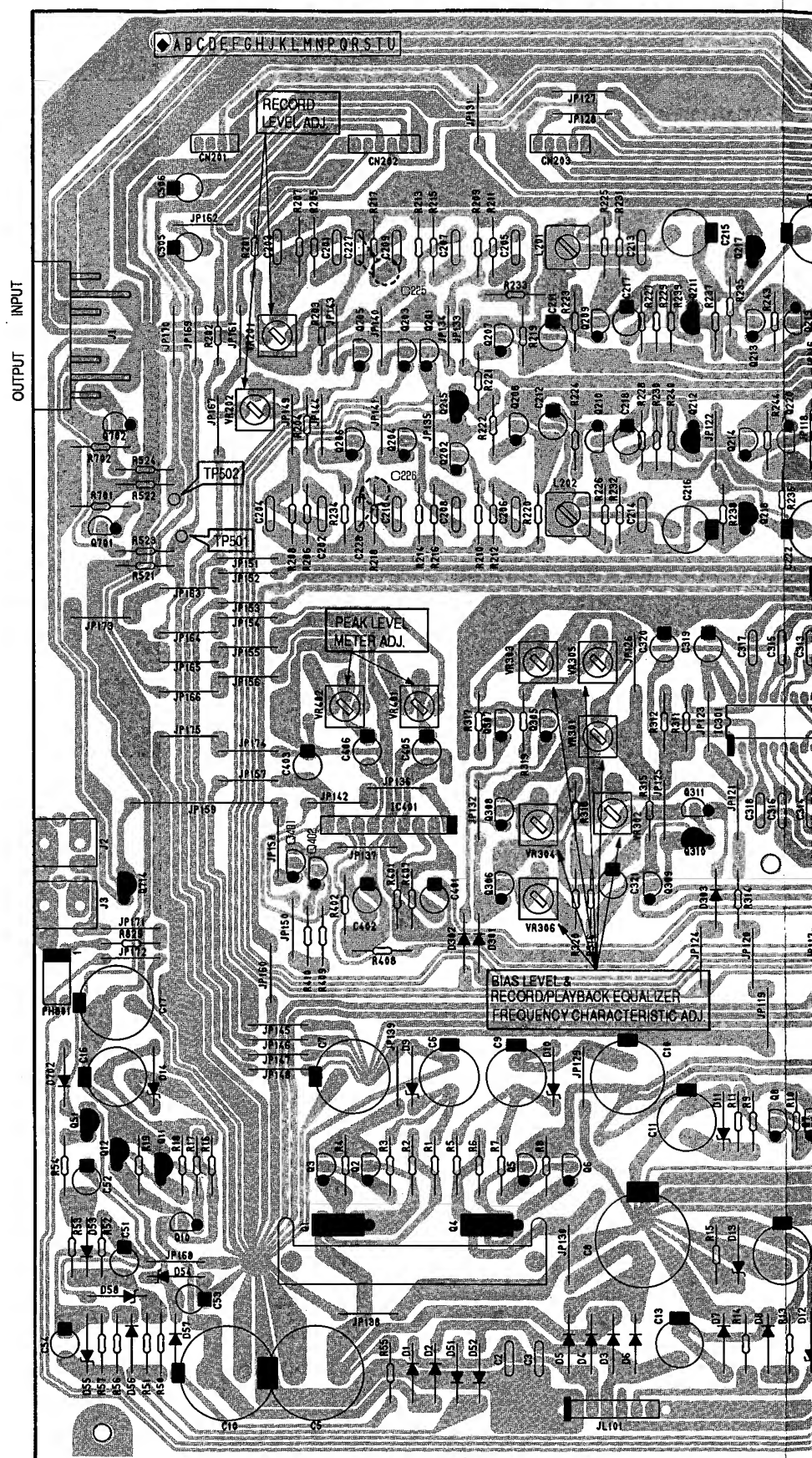
P. C. BOARDS (1)

PCB-1 Main P. C. Board



P. C. BOARDS (1)

PCB-1 Main P. C. Board



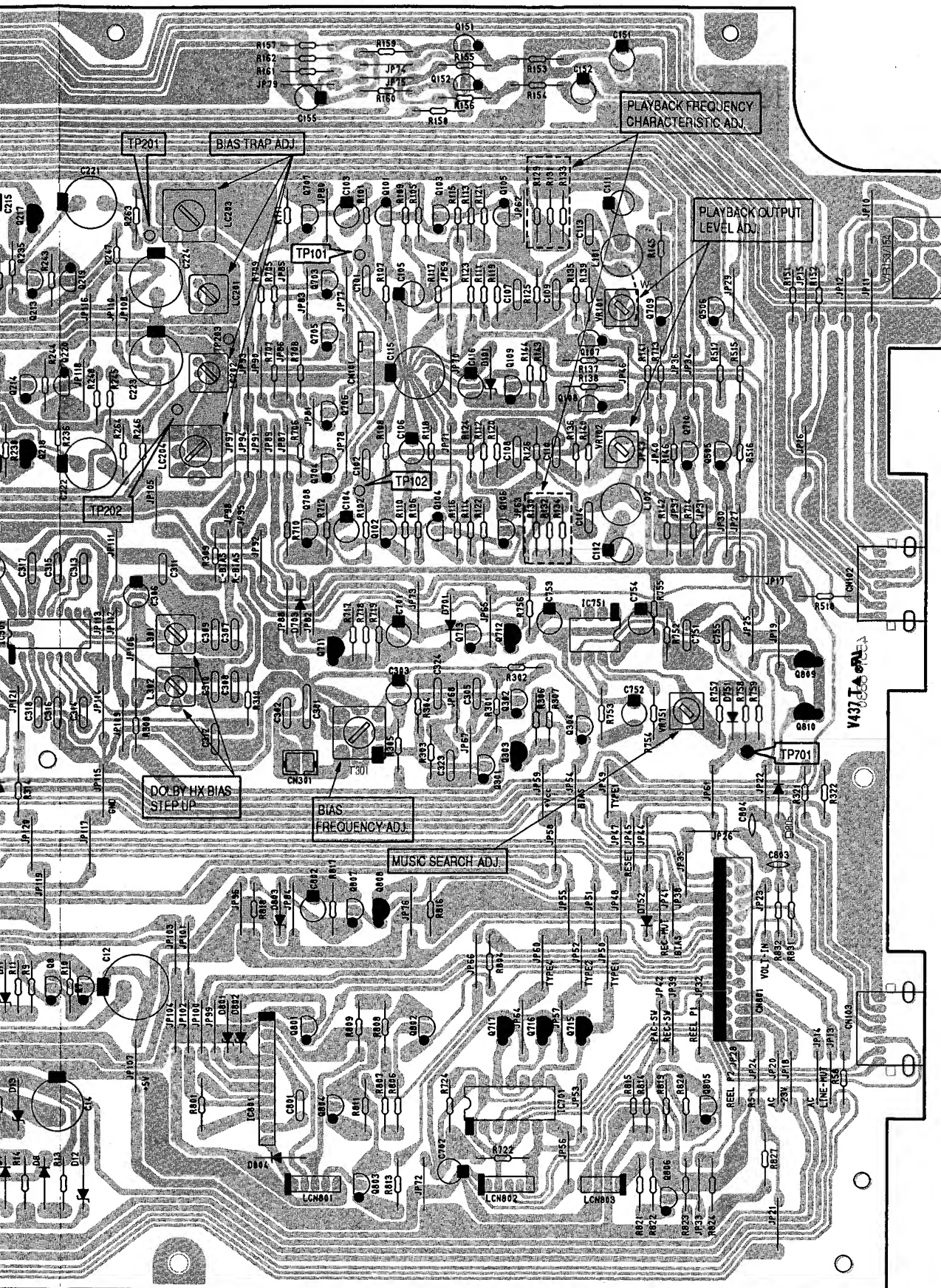
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G

H

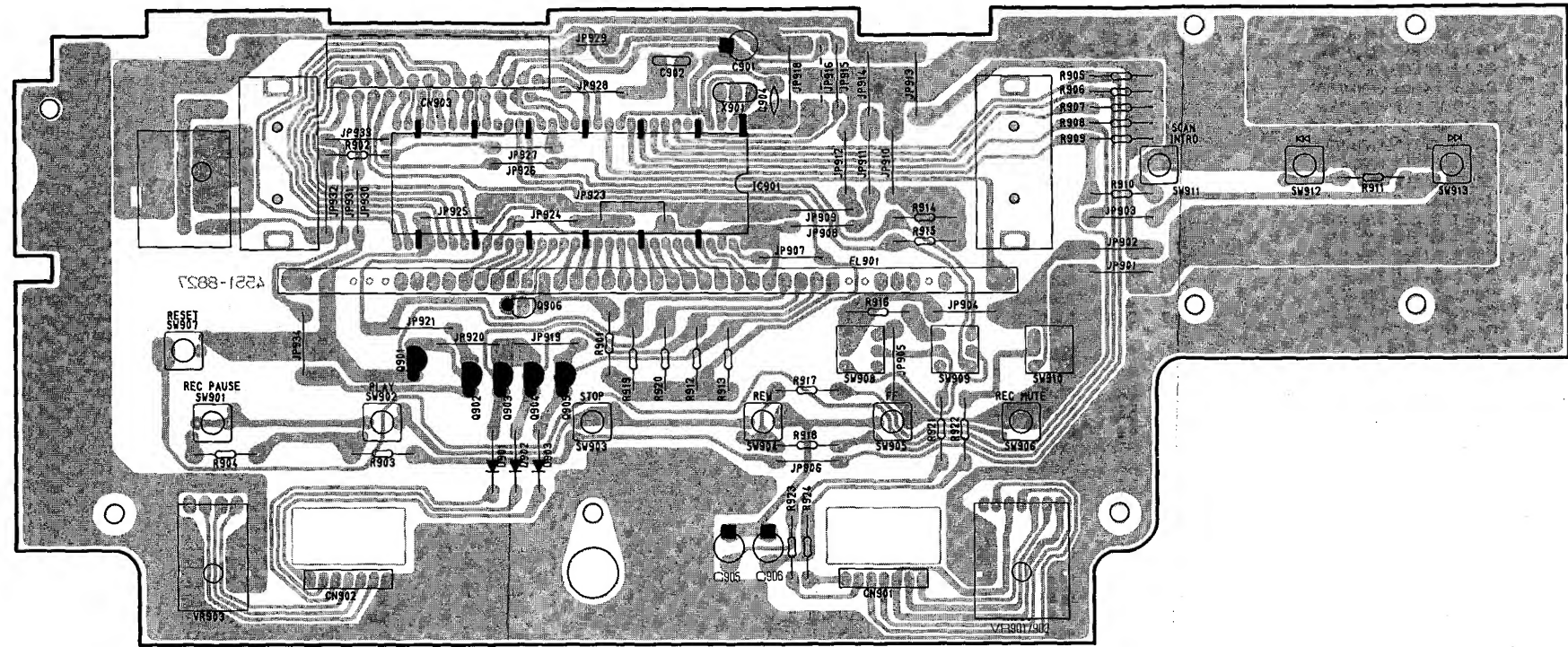
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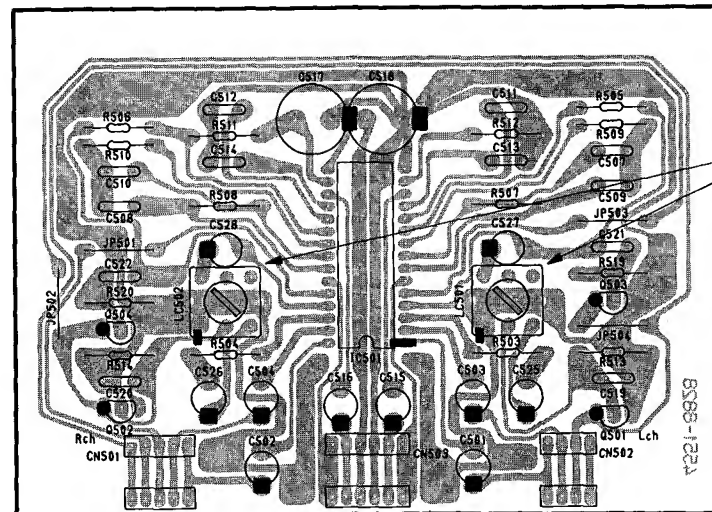


P. C. BOARDS (2)

PCB-2 Front P. C. Board

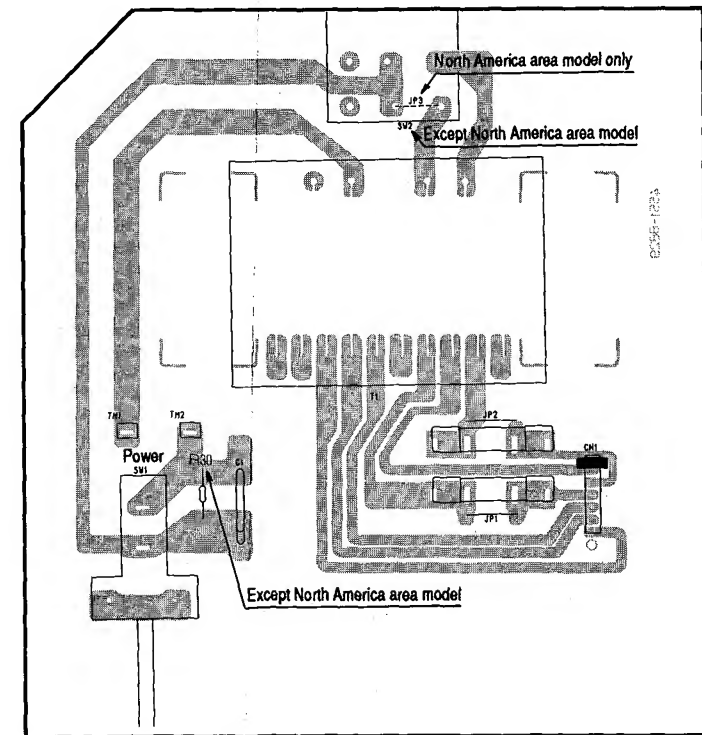


PCB-3 Dolby NR P. C. Board



MPX FILTER

PCB-4 Power P. C. Board



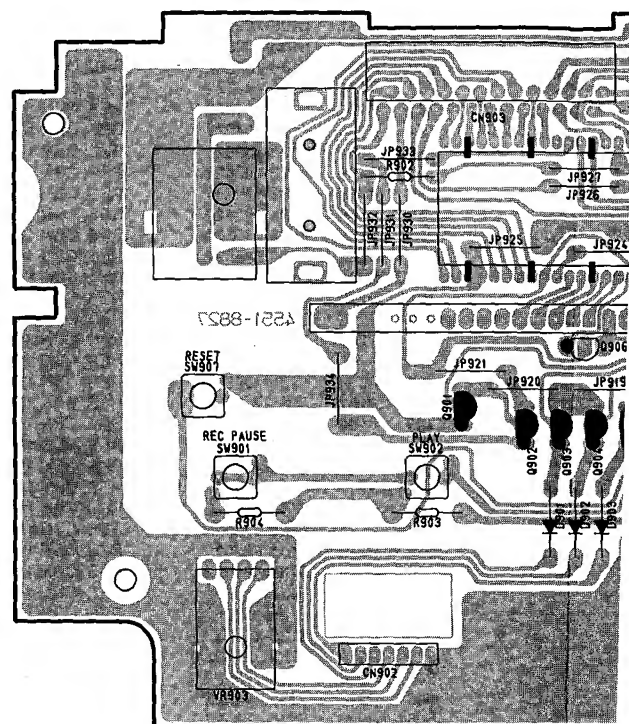
North America area model only

Except North America area model

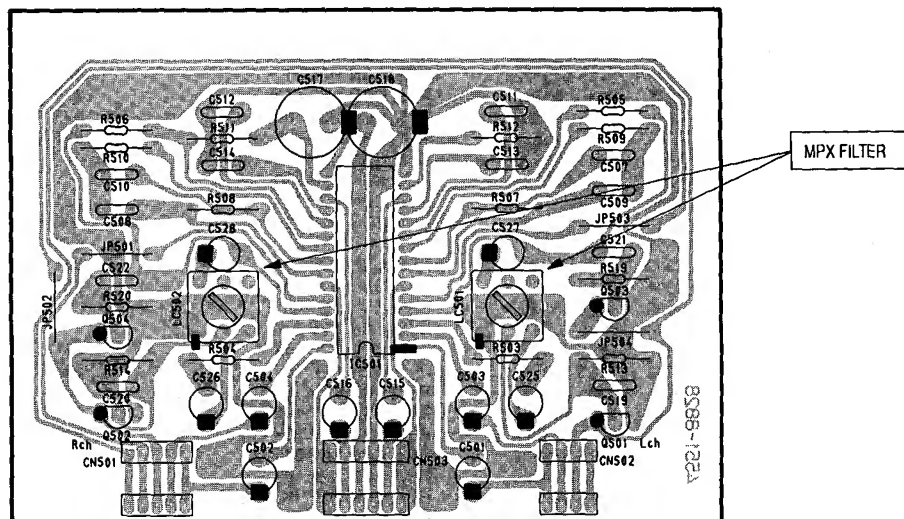
Except North America area model

P. C. BOARDS (2)

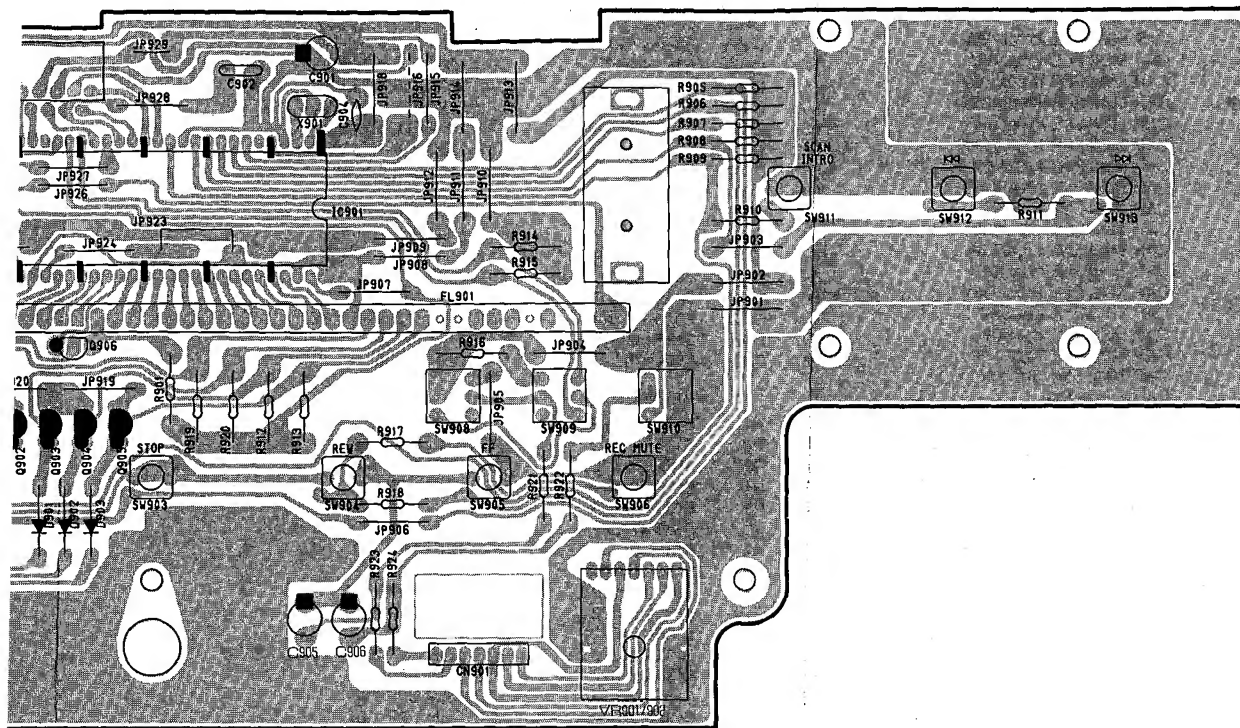
PCB-2 Front P. C. Board



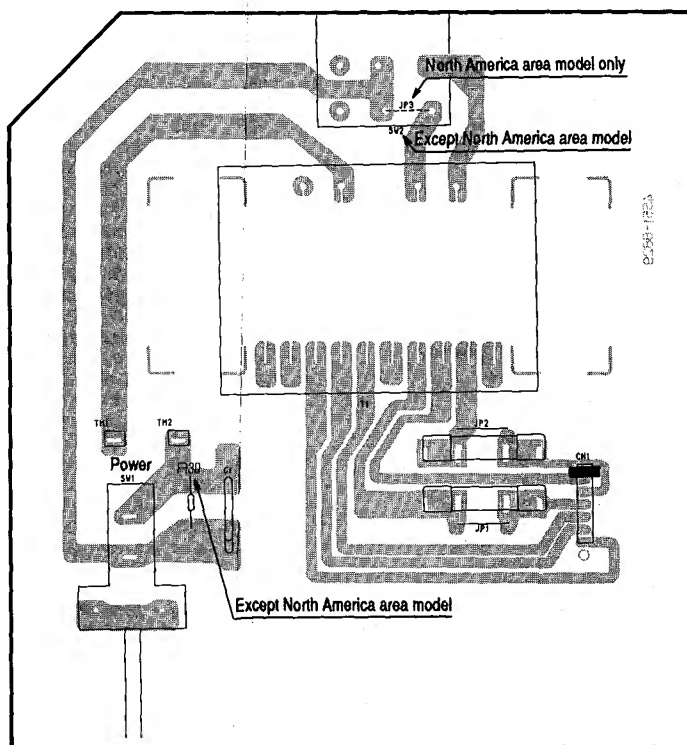
PCB-3 Dolby NR P. C. Board



E F G H I J



PCB-4 Power P. C. Board



PX FILTER

ELECTRICAL PARTS LIST

Ser. No.	Ref. No.	Part No.	Description	Ser. No.	Ref. No.	Part No.	Description	Ser. No.	Ref. No.	Part No.	Description	Ser. No.	Ref. No.	Part No.	Description
PCB-1 MAIN P. C. BOARD															
CAPACITORS															
616	C2	5352-S060K104	CAP, MTL .1μ	542	C320	5345-106F041	CAP, MINI ELE 10μ/50V	447	R140	5135-103522	RES, CBN 1/2P 10K	719	R401	5135-334522	RES, CBN 1/2P 330K
616	C3	5352-S060K104	CAP, MTL .1μ	542	C321	5345-106F041	CAP, MINI ELE 10μ/50V	449	R141	5135-104522	RES, CBN 1/2P 100K	719	R402	5135-334522	RES, CBN 1/2P 330K
603	C5	5345-228D041	CAP, MINI ELE 2200μ/25V	554	C323	5359-S010J562	CAP, PPP 5600p	449	R142	5135-104522	RES, CBN 1/2P 100K	720	R407	5135-103522	RES, CBN 1/2P 10K
604	C6	5345-477C041	CAP, MINI ELE 470μ/16V	554	C324	5359-S010J562	CAP, PPP 5600p	431	R143	5135-4R7522	RES, CBN 1/2P 4.7	720	R408	5135-103522	RES, CBN 1/2P 10K
605	C7	5345-108C041	CAP, MINI ELE 1000μ/16V	712	C401	5345-475F041	CAP, MINI ELE 4.7μ/50V	442	R144	5135-102522	RES, CBN 1/2P 1K	721	R409	5135-223522	RES, CBN 1/2P 22K
607	C8	5345-478D0962	CAP, MINI ELE 4700μ/25V	712	C402	5345-475F041	CAP, MINI ELE 4.7μ/50V	750	R151	5135-102522	RES, CBN 1/2P 1K	721	R410	5135-223522	RES, CBN 1/2P 22K
604	C9	5345-477C041	CAP, MINI ELE 470μ/16V	713	C403	5345-476D041	CAP, MINI ELE 47μ/25V	750	R152	5135-102522	RES, CBN 1/2P 1K	662	R515	5135-103522	RES, CBN 1/2P 10K
605	C10	5345-108C041	CAP, MINI ELE 1000μ/16V	712	C405	5345-475F041	CAP, MINI ELE 4.7μ/50V	750	R153	5135-102522	RES, CBN 1/2P 1K	669	R516	5135-123522	RES, CBN 1/2P 12K
604	C11	5345-477C041	CAP, MINI ELE 470μ/16V	712	C406	5345-475F041	CAP, MINI ELE 4.7μ/50V	750	R154	5135-102522	RES, CBN 1/2P 1K	667	R517	5135-223522	RES, CBN 1/2P 22K
606	C12	5345-108B041	CAP, MINI ELE 1000μ/10V	650	C505	5345-106C0951	CAP, MINI ELE 10μ/16V	751	R155	5135-104522	RES, CBN 1/2P 100K	662	R518	5135-103522	RES, CBN 1/2P 10K
610	C13	5345-226E041	CAP, MINI ELE 22μ/35V	650	C506	5345-106C0951	CAP, MINI ELE 10μ/16V	751	R156	5135-104522	RES, CBN 1/2P 100K	663	R521	5135-104522	RES, CBN 1/2P 100K
608	C14	5345-227E041	CAP, MINI ELE 220μ/35V	683	C701	5345-106F041	CAP, MINI ELE 10μ/50V	750	R157	5135-102522	RES, CBN 1/2P 1K	663	R522	5135-104522	RES, CBN 1/2P 100K
609	C15	5345-477E041	CAP, MINI ELE 470μ/35V	683	C702	5345-106F041	CAP, MINI ELE 10μ/50V	750	R158	5135-102522	RES, CBN 1/2P 1K	658	R523	5135-222522	RES, CBN 1/2P 2.2K
604	C16	5345-477C041	CAP, MINI ELE 470μ/16V	893	C751	5354-473J1HM	CAP, MYL .047μ	750	R159	5135-102522	RES, CBN 1/2P 1K	658	R524	5135-222522	RES, CBN 1/2P 2.2K
605	C17	5345-108C041	CAP, MINI ELE 1000μ/16V	891	C752	5345-476D041	CAP, MINI ELE 47μ/25V	750	R160	5135-102522	RES, CBN 1/2P 1K	691	R701	5135-222522	RES, CBN 1/2P 2.2K
684	C51	5345-226F041	CAP, MINI ELE 22μ/50V	891	C753	5345-476D041	CAP, MINI ELE 47μ/25V	752	R161	5135-472522	RES, CBN 1/2P 4.7K	691	R702	5135-222522	RES, CBN 1/2P 2.2K
684	C52	5345-226F041	CAP, MINI ELE 22μ/50V	891	C754	5345-476D041	CAP, MINI ELE 47μ/25V	749	R162	5135-562522	RES, CBN 1/2P 5.6K	688	R705	5135-103522	RES, CBN 1/2P 10K
685	C53	5345-107C041	CAP, MINI ELE 100μ/16V	894	C755	5359-S010J822	CAP, PPP 8200p	496	R201	5135-152522	RES, CBN 1/2P 1.5K	688	R706	5135-103522	RES, CBN 1/2P 10K
686	C54	5345-106F041	CAP, MINI ELE 10μ/50V	866	C801	5359-S010J103	CAP, PPP .01μ	496	R202	5135-152522	RES, CBN 1/2P 1.5K	689	R707	5135-392522	RES, CBN 1/2P 3.9K
427	C101	5359-S010J471	CAP, PPP 470p	864	C802	5345-107B041	CAP, MINI ELE 100μ/10V	497	R203	5135-222522	RES, CBN 1/2P 2.2K	689	R708	5135-392522	RES, CBN 1/2P 3.9K
427	C102	5359-S010J471	CAP, PPP 470p	867	C803	5361-102KB	CAP, CER 1000p	497	R204	5135-222522	RES, CBN 1/2P 2.2K	688	R709	5135-103522	RES, CBN 1/2P 10K
416	C103	5345-226C0951	CAP, MINI ELE 22μ/16V	867	C804	5361-102KB	CAP, CER 1000p	498	R205	5135-104522	RES, CBN 1/2P 100K	688	R710	5135-103522	RES, CBN 1/2P 10K
416	C104	5345-226C0951	CAP, MINI ELE 22μ/16V	RESISTORS				498	R206	5135-104522	RES, CBN 1/2P 100K	690	R711	5135-223522	RES, CBN 1/2P 22K
419	C105	5345-227B041	CAP, MINI ELE 220μ/10V	619	R1	5135-152522	RES, CBN 1/2P 1.5K	499	R207	5135-223522	RES, CBN 1/2P 22K	690	R712	5135-223522	RES, CBN 1/2P 22K
419	C106	5345-227B041	CAP, MINI ELE 220μ/10V	620	R2	5135-471522	RES, CBN 1/2P 470	499	R208	5135-223522	RES, CBN 1/2P 22K	687	R713	5135-103522	RES, CBN 1/2P 10K
424	C107	5359-S010J682	CAP, PPP 6800p	621	R3	5135-101522	RES, CBN 1/2P 100	500	R209	5135-183522	RES, CBN 1/2P 18K	687	R714	5135-103522	RES, CBN 1/2P 10K
424	C108	5359-S010J682	CAP, PPP 6800p	622	R4	5135-3R9522	RES, CBN 1/2P 3.9	500	R210	5135-183522	RES, CBN 1/2P 18K	691	R717	5135-222522	RES, CBN 1/2P 2.2K
424	C109	5359-S010J682	CAP, PPP 6800p	619	R5	5135-152522	RES, CBN 1/2P 1.5K	501	R211	5135-103522	RES, CBN 1/2P 10K	687	R718	5135-103522	RES, CBN 1/2P 10K
424	C110	5359-S010J682	CAP, PPP 6800p	620	R6	5135-471522	RES, CBN 1/2P 470	501	R212	5135-103522	RES, CBN 1/2P 10K	687	R719	5135-103522	RES, CBN 1/2P 10K
415	C111	5345-106C0951	CAP, MINI ELE 10μ/16V	621	R7	5135-101522	RES, CBN 1/2P 100	518	R213	5135-823522	RES, CBN 1/2P 82K	694	R722	5135-473522	RES, CBN 1/2P 47K
415	C112	5345-106C0951	CAP, MINI ELE 10μ/16V	623	R8	5135-1R2522	RES, CBN 1/2P 1.2	518	R214	5135-823522	RES, CBN 1/2P 82K	694	R724	5135-473522	RES, CBN 1/2P 47K
423	C113	5359-S010J182	CAP, PPP 1800p	619	R9	5135-152522	RES, CBN 1/2P 1.5K	519	R215	5135-563522	RES, CBN 1/2P 56K	898	R752	5135-104522	RES, CBN 1/2P 100K
423	C114	5359-S010J182	CAP, PPP 1800p	620	R10	5135-471522	RES, CBN 1/2P 470	519	R216	5135-563522	RES, CBN 1/2P 56K	899	R753	5135-331522	RES, CBN 1/2P 330
420	C115	5345-477C041	CAP, MINI ELE 470μ/16V	621	R11	5135-101522	RES, CBN 1/2P 100	508	R217	5135-154522	RES, CBN 1/2P 150K	900	R754	5135-104522	RES, CBN 1/2P 100K
417	C116	5345-336C041	CAP, MINI ELE 33μ/16V	626	R13	5135-221522	RES, CBN 1/2P 220	508	R218	5135-154522	RES, CBN 1/2P 150K	904	R755	5135-103522	RES, CBN 1/2P 10K
753	C151	5345-106C0951	CAP, MINI ELE 10μ/16V	625	R14	5135-223522	RES, CBN 1/2P 22K	505	R219	5135-222522	RES, CBN 1/2P 2.2K	901	R756	5135-331522	RES, CBN 1/2P 330
753	C152	5345-106C0951	CAP, MINI ELE 10μ/16V	625	R15	5135-223522	RES, CBN 1/2P 22K	505	R220	5135-222522	RES, CBN 1/2P 2.2K	902	R757	5135-332522	RES, CBN 1/2P 3.3K
754	C155	5345-107B041	CAP, MINI ELE 100μ/10V	619	R16	5135-152522	RES, CBN 1/2P 1.5K	506	R221	5135-472522	RES, CBN 1/2P 4.7K	898	R758	5135-104522	RES, CBN 1/2P 100K
485	C201	5359-S010J152	CAP, PPP 1500p	620	R17	5135-471522	RES, CBN 1/2P 470	506	R222	5135-472522	RES, CBN 1/2P				

ELECTRICAL PARTS LIST

Ser. No.	Ref. No.	Part No.	Description	Ser. No.	Ref. No.	Part No.	Description
PCB-1 MAIN P. C. BOARD							
CAPACITORS							
616	C2	5352-S060K104	CAP, MTL .1μ	542	C320	5345-106F041	CAP, MINI ELE 10μ/50V
616	C3	5352-S060K104	CAP, MTL .1μ	542	C321	5345-106F041	CAP, MINI ELE 10μ/50V
603	C5	5345-228D041	CAP, MINI ELE 2200μ/25V	554	C323	5359-S010J562	CAP, PPP 5600p
604	C6	5345-477C041	CAP, MINI ELE 470μ/16V	554	C324	5359-S010J562	CAP, PPP 5600p
605	C7	5345-108C041	CAP, MINI ELE 1000μ/16V	712	C401	5345-475F041	CAP, MINI ELE 4.7μ/50V
607	C8	5345-478D0962	CAP, MINI ELE 4700μ/25V	712	C402	5345-475F041	CAP, MINI ELE 4.7μ/50V
604	C9	5345-477C041	CAP, MINI ELE 470μ/16V	713	C403	5345-476D041	CAP, MINI ELE 4.7μ/25V
605	C10	5345-108C041	CAP, MINI ELE 1000μ/16V	712	C405	5345-475F041	CAP, MINI ELE 4.7μ/50V
604	C11	5345-477C041	CAP, MINI ELE 470μ/16V	712	C406	5345-475F041	CAP, MINI ELE 4.7μ/50V
606	C12	5345-108B041	CAP, MINI ELE 1000μ/10V	650	C505	5345-106C0951	CAP, MINI ELE 10μ/16V
610	C13	5345-226E041	CAP, MINI ELE 220μ/35V	650	C506	5345-106C0951	CAP, MINI ELE 10μ/16V
608	C14	5345-227E041	CAP, MINI ELE 220μ/35V	683	C701	5345-106F041	CAP, MINI ELE 10μ/50V
609	C15	5345-477E041	CAP, MINI ELE 470μ/35V	683	C702	5345-106F041	CAP, MINI ELE 10μ/50V
604	C16	5345-477C041	CAP, MINI ELE 470μ/16V	893	C751	5354-473J1H1M	CAP, MYL .047μ
605	C17	5345-108C041	CAP, MINI ELE 1000μ/16V	891	C752	5345-476D041	CAP, MINI ELE 47μ/25V
684	C51	5345-226F041	CAP, MINI ELE 22μ/50V	891	C753	5345-476D041	CAP, MINI ELE 47μ/25V
684	C52	5345-226F041	CAP, MINI ELE 22μ/50V	891	C754	5345-476D041	CAP, MINI ELE 47μ/25V
685	C53	5345-107C041	CAP, MINI ELE 100μ/16V	894	C755	5359-S010J822	CAP, PPP 8200p
686	C54	5345-106F041	CAP, MINI ELE 10μ/50V	866	C801	5359-S010J103	CAP, PPP .01μ
427	C101	5359-S010J471	CAP, PPP 470p	864	C802	5345-107B041	CAP, MINI ELE 100μ/10V
427	C102	5359-S010J471	CAP, PPP 470p	867	C803	5361-102KB	CAP, CER 1000p
416	C103	5345-226C0951	CAP, MINI ELE 22μ/16V	867	C804	5361-102KB	CAP, CER 1000p
416	C104	5345-226C0951	CAP, MINI ELE 22μ/16V	RESISTORS			
419	C105	5345-227B041	CAP, MINI ELE 220μ/10V	619	R1	5135-152522	RES, CBN 1/2P 1.5K
419	C106	5345-227B041	CAP, MINI ELE 220μ/10V	620	R2	5135-471522	RES, CBN 1/2P 470
424	C107	5359-S010J682	CAP, PPP 6800p	621	R3	5135-101522	RES, CBN 1/2P 100
424	C108	5359-S010J682	CAP, PPP 6800p	622	R4	5135-3R9522	RES, CBN 1/2P 3.9
424	C109	5359-S010J682	CAP, PPP 6800p	619	R5	5135-152522	RES, CBN 1/2P 1.5K
424	C110	5359-S010J682	CAP, PPP 6800p	620	R6	5135-471522	RES, CBN 1/2P 470
415	C111	5345-106C0951	CAP, MINI ELE 10μ/16V	621	R7	5135-101522	RES, CBN 1/2P 100
415	C112	5345-106C0951	CAP, MINI ELE 10μ/16V	623	R8	5135-1R2522	RES, CBN 1/2P 1.2
423	C113	5359-S010J182	CAP, PPP 1800p	619	R9	5135-152522	RES, CBN 1/2P 1.5K
423	C114	5359-S010J182	CAP, PPP 1800p	620	R10	5135-471522	RES, CBN 1/2P 470
420	C115	5345-477C041	CAP, MINI ELE 470μ/16V	621	R11	5135-101522	RES, CBN 1/2P 100
417	C116	5345-336C041	CAP, MINI ELE 33μ/16V	636	R13	5135-221522	RES, CBN 1/2P 220
753	C151	5345-106C0951	CAP, MINI ELE 10μ/16V	625	R14	5135-223522	RES, CBN 1/2P 22K
753	C152	5345-106C0951	CAP, MINI ELE 10μ/16V	625	R15	5135-223522	RES, CBN 1/2P 22K
754	C155	5345-107B041	CAP, MINI ELE 100μ/10V	619	R16	5135-152522	RES, CBN 1/2P 1.5K
485	C201	5359-S010J152	CAP, PPP 1500p	620	R17	5135-471522	RES, CBN 1/2P 470
485	C202	5359-S010J152	CAP, PPP 1500p	621	R18	5135-101522	RES, CBN 1/2P 100
484	C203	5359-S010J122	CAP, PPP 1200p	624	R19	5135-100522	RES, CBN 1/2P 10
484	C204	5359-S010J122	CAP, PPP 1200p	626	R50	5135-331522	RES, CBN 1/2P 330
486	C205	5359-S010J822	CAP, PPP 8200p	626	R51	5135-331522	RES, CBN 1/2P 330
486	C206	5359-S010J822	CAP, PPP 8200p	691	R52	5135-222522	RES, CBN 1/2P 2.2K
487	C207	5359-S010J821	CAP, PPP 820p	696	R53	5135-105522	RES, CBN 1/2P 1M
487	C208	5359-S010J821	CAP, PPP 820p	693	R54	5135-104522	RES, CBN 1/2P 100K
488	C209	5359-S010J471	CAP, PPP 470p	698	R55	5135-182522	RES, CBN 1/2P 1.8K
488	C210	5359-S010J471	CAP, PPP 470p	699	R56	5135-102522	RES, CBN 1/2P 1K
476	C211	5345-105F0951	CAP, MINI ELE 1μ/50V	699	R57	5135-102522	RES, CBN 1/2P 1K
476	C212	5345-105F0951	CAP, MINI ELE 1μ/50V	687	R58	5135-103522	RES, CBN 1/2P 10K
491	C213	5359-S010J123	CAP, PPP .012μ	437	R101	5135-101522	RES, CBN 1/2P 100
491	C214	5359-S010J123	CAP, PPP .012μ	437	R102	5135-101522	RES, CBN 1/2P 100
477	C215	5345-476C0951	CAP, MINI ELE 47μ/16V	448	R105	5174-S010F223	RES, MTL 1/4 22K
477	C216	5345-476C0951	CAP, MINI ELE 47μ/16V	448	R106	5174-S010F223	RES, MTL 1/4 22K
478	C217	5345-106C0951	CAP, MINI ELE 10μ/16V	441	R107	5174-S010F181	RES, MTL 1/4 180
478	C218	5345-106C0951	CAP, MINI ELE 10μ/16V	441	R108	5174-S010F181	RES, MTL 1/4 180
480	C221	5345-227A0951	CAP, MINI ELE 220μ/6.3V	450	R109	5135-224522	RES, CBN 1/2P 220K
480	C222	5345-227A0951	CAP, MINI ELE 220μ/6.3V	450	R110	5135-224522	RES, CBN 1/2P 220K
481	C223	5345-227C041	CAP, MINI ELE 220μ/16V	446	R111	5135-332522	RES, CBN 1/2P 3.3K
481	C224	5345-227C041	CAP, MINI ELE 220μ/16V	446	R112	5135-332522	RES, CBN 1/2P 3.3K
492	C225	5359-S010J122	CAP, PPP 1200p	444	R113	5135-562522	RES, CBN 1/2P 5.6K
492	C226	5359-S010J122	CAP, PPP 1200p	444	R114	5135-562522	RES, CBN 1/2P 5.6K
493	C227	5359-S010J561	CAP, PPP 560p	435	R115	5135-470522	RES, CBN 1/2P 47
493	C228	5359-S010J561	CAP, PPP 560p	435	R116	5135-470522	RES, CBN 1/2P 47
547	C301	5354-S040K103	CAP, MYL .01μ	439	R117	5135-681522	RES, CBN 1/2P 680
556	C302	5361-100J434	CAP, CER 10p	439	R118	5135-681522	RES, CBN 1/2P 680
542	C303	5345-106F041	CAP, MINI ELE 10μ/50V	451	R119	5135-684522	RES, CBN 1/2P 680K
551	C305	5359-S010J103	CAP, PPP .01μ	451	R120	5135-684522	RES, CBN 1/2P 680K
543	C306	5345-105F041	CAP, MINI ELE 1μ/50V	438	R121	5135-331522	RES, CBN 1/2P 330
557	C307	5361-1010423	CAP, CER 100p	438	R122	5135-331522	RES, CBN 1/2P 330
557	C308	5361-1010423	CAP, CER 100p	442	R123	5135-102522	RES, CBN 1/2P 1K
558	C309	5361-4710423	CAP, CER 470p	442	R124	5135-102522	RES, CBN 1/2P 1K
558	C310	5361-4710423	CAP, CER 470p	452	R125	5135-822522	RES, CBN 1/2P 8.2K
559	C311	5361-561KB	CAP, CER 560p	452	R126	5135-822522	RES, CBN 1/2P 8.2K
559	C312	5361-561KB	CAP, CER 560p	436	R129	5135-472522	RES, CBN 1/2P 4.7K
548	C313	5354-104593	CAP, MYL .1μ	436	R130	5135-472522	RES, CBN 1/2P 4.7K
548	C314	5354-104593	CAP, MYL .1μ	434	R131	5135-332522	RES, CBN 1/2P 3.3K
552	C315	5359-S010J223	CAP, PPP .022μ	434	R132	5135-332522	RES, CBN 1/2P 3.3K
552	C316	5359-S010J223	CAP, PPP .022μ	446	R133	5135-332522	RES, CBN 1/2P 3.3K
553	C317	5359-S010J103	CAP, PPP .01μ	446	R134	5135-332522	RES, CBN 1/2P 3.3K
553	C318	5359-S010J103	CAP, PPP .01μ	443	R135	5135-392522	RES, CBN 1/2P 3.9K
542	C319	5345-106F041	CAP, MINI ELE 10μ/50V	443	R136	5135-392522	RES, CBN 1/2P 3.9K
				453	R137	5135-105522	RES, CBN 1/2P 1M
				453	R138	5135-105522	RES, CBN 1/2P 1M
				447	R139	5135-103522	RES, CBN 1/2P 10K

Ser. No.	Ref. No.	Part No.	Description
401	Q104	5613-1775(F)	XISTOR, NPN R
402	Q105	5613-2320L(F)	XISTOR, NPN R
402	Q106	5613-2320L(F)	XISTOR, NPN R
404	Q107	5613-UN4214	XISTOR, NPN R
404	Q108	5613-UN4214	XISTOR, NPN R
403	Q109	5613-2320(F)	XISTOR, NPN R
755	Q151	5613-2320L(F)	XISTOR, NPN R
755	Q152	5613-2320L(F)	XISTOR, NPN R
463	Q201	5613-UN4214	XISTOR, NPN R
463	Q202	5613-UN4214	XISTOR, NPN R
463	Q203	5613-UN4214	XISTOR, NPN R
463	Q204	5613-UN4214	XISTOR, NPN R
463	Q205	5613-UN4214	XISTOR, NPN R
463	Q206	5613-UN4214	XISTOR, NPN R
464	Q207	5614-1450(T)	XISTOR, NPN A
464	Q208	5614-1450(T)	XISTOR, NPN A
461	Q209	5613-2320L(F)	XISTOR, NPN R
461	Q210	5613-2320L(F)	XISTOR, NPN R
462	Q211	5611-999L(F)	XISTOR, PNP R
462	Q212	5611-999L(F)	XISTOR, PNP R
461	Q213	5613-2320L(F)	XISTOR, NPN R
461	Q214	5613-2320L(F)	XISTOR, NPN R
465	Q215	5611-UN4114	XISTOR, PNP R
462	Q217	5611-999L(F)	XISTOR, PNP R
462	Q218	5611-999L(F)	XISTOR, PNP R
461	Q219	5613-2320L(F)	XISTOR, NPN R
461	Q220	5613-2320L(F)	XISTOR, NPN R
523	Q301	5613-2120(Y)	XISTOR, NPN R
523	Q302	5613-2120(Y)	XISTOR, NPN R
526	Q303	5611-950(Y)	XISTOR, PNP R
524	Q304	5613-UN4214	XISTOR, NPN R
524	Q305	5613-UN4214	XISTOR, NPN R
524	Q306	5613-UN4214	XISTOR, NPN R
524	Q307	5613-UN4214	XISTOR, NPN R
524	Q308	5613-UN4214	XISTOR, NPN R
525	Q309	5613-3311A(R)	XISTOR, NPN R
527	Q310	5611-UN4114	XISTOR, PNP R
524	Q311	5613-UN4214	XISTOR, NPN R
715	Q401	5613-UN4214	XISTOR, NPN R
716	Q402	5613-3311A(R)	XISTOR, NPN R
642	Q505	5613-UN4214	XISTOR, NPN R
644	Q506	5613-3311A(R)	XISTOR, NPN R
673	Q701	5613-2878(B)	XISTOR, NPN R
673	Q702	5613-2878(B)	XISTOR, NPN R
672	Q703	5613-2240(BL)	XISTOR, NPN R
672	Q704	5613-2240(BL)	XISTOR, NPN R
672	Q705	5613-2240(BL)	XISTOR, NPN R
672	Q706	5613-2240(BL)	XISTOR, NPN R
677	Q707	5614-1450(T)	XISTOR, NPN A
677	Q708	5614-1450(T)	XISTOR, NPN A
677	Q709	5614-1450(T)	XISTOR, NPN A
677	Q710	5614-1450(T)	XISTOR, NPN A
675	Q711	5611-970(BL)	XISTOR, PNP R
676	Q712	5611-UN4114	XISTOR, PNP R
674	Q713	5613-UN4214	XISTOR, NPN R
676	Q714	5611-UN4114	XISTOR, PNP R
676	Q715	5611-UN4114	XISTOR, PNP R
676	Q716	5611-UN4114	XISTOR, PNP R
676	Q717	5611-UN4114	XISTOR, PNP R
856	Q801	5613-UN4214	XISTOR, NPN R
855	Q802	5613-2925(T)	XISTOR, NPN R
855	Q803	5613-2925(T)	XISTOR, NPN R
855	Q804	5613-2925(T)	XISTOR, NPN R
854	Q805	5613-3311A(R)	XISTOR, NPN R
854	Q806	5613-3311A(R)	XISTOR, NPN R
854	Q807	5613-3311A(R)	XISTOR, NPN R
853	Q808	5611-UN4114	XISTOR, PNP R
853	Q809	5611-UN4114	XISTOR, PNP R
853	Q810	5611-UN4114	XISTOR, PNP R

DIODES

589	△D1	5632-S5566B	DIODE, RECT
589	△D2	5632-S5566B	DIODE, RECT
589	△D3	5632-S5566B	DIODE, RECT
589	△D4	5632-S5566B	DIODE, RECT
589	△D5	5632-S5566B	DIODE, RECT
589	△D6	5632-S5566B	DIODE, RECT
589	D7	5632-S5566B	DIODE, RECT
589	D8	5632-S5566B	DIODE, RECT
591	D9	5635-HZ12B2L	DIODE, ZENER
591	D10	5635-HZ12B2L	DIODE, ZENER
593	D11	5635-HZ6B2L	DIODE, ZENER
592	D12	5635-HZ6A1L	DIODE, ZENER
594	D13	5635-HZ18-2L	DIODE, ZENER
590	D14	5635-HZ12C2L	DIODE, ZENER
680	△D51	5631-1S2473	DIODE, DET

Ser. No.	Ref. No.	Part No.	Description
680	△D52	5631-1S2473	DIODE, DET
680	D53	5631-1S2473	DIODE, DET
681	D54	5635-HZ11C1L	DIODE, ZENER
682	D55	5635-RD5R1EB2	DIODE, ZENER
680	D56	5631-1S2473	DIODE, DET
680	D57	5631-1S2473	DIODE, DET
595	D58	5635-HZ16-2L	DIODE, ZENER
406	D101	5635-HZ11B2L	DIODE, ZENER
528	D301	5631-1S2473	DIODE, DET
528	D302	5631-1S2473	DIODE, DET
528	D303	5631-1S2473	DIODE, DET
679	D701	5631-1S2473	DIODE, DET
679	D702	5631-1S2473	DIODE, DET
679	D703	5631-1S2473	DIODE, DET
883	D751	5631-1S2473	DIODE, DET
883	D752	5631-1S2473	DIODE, DET
859	D801	5635-HZ7C3	DIODE, ZENER
858	D802	5635-HZ5C2	DIODE, ZENER
860	D803	5635-HZ3B2	DIODE, ZENER
861	D804	5632-S5566B	DIODE, RECT
862	D805	5631-1S2473	DIODE, DET
COILS			
409	L101	5995-S200J273	COIL W/CORE
409	L102	5995-S200J273	COIL W/CORE
469	L201	5932-11504	COIL CASE, 7
469	L202	5932-11504	COIL CASE, 7
532	L301	5932-11401	COIL CASE, 7
532	L302	5932-11401	COIL CASE, 7
CONTROLS			
411	VR101	5101-20301934	RES, SEMI FIX 20K
411	VR102	5101-20301934	RES, SEMI FIX 20K
738	VR153/	5113-S0604503	RES, V CBN 16 50K
	154		
473	VR201	5101-20201934	RES, SEMI FIX 2K
473	VR202	5101-20201934	RES, SEMI FIX 2K
535	VR301	5101-20301934	RES, SEMI FIX 20K
535	VR302	5101-20301934	RES, SEMI FIX 20K
535	VR303	5101-20301934	RES, SEMI FIX 20K
535	VR304	5101-20301934	RES, SEMI FIX 20K
537	VR305	5101-50201934	RES, SEMI FIX 5K
537	VR306	5101-50201934	RES, SEMI FIX 5K
709	VR401	5101-20201934	RES, SEMI FIX 2K
709	VR402	5101-20201934	RES, SEMI FIX 2K
885	VR751	5101-10401934	RES, SEMI FIX 100K
MISCELLANEOUS			
782	△J1	4484-46	PIN JACK, 4P
781	J2	4451-00184	JACK, 1P
781	J3	4451-00184	JACK, 1P
792	JL101	4242-R0506121	JUMPER LEAD
470	LC201	5214-13802	LC COMPOSITE
470	LC202	5214-13802	LC COMPOSITE
471	LC203	5214-13901	LC COMPOSITE
471	LC204	5214-13901	LC COMPOSITE
798	LCN801	4163-S0205161	CONNECTOR W/W
799	LCN802	4163-S0205151	CONNECTOR W/W
800	LCN803	4163-S0204141	CONNECTOR W/W
533	T301	5923-10302	OSC COIL, 10
857	PH801	5624-ON3161	PHOTO COUPLR
776	TP101	4214-132	TERMINAL
776	TP102	4214-132	TERMINAL
776	TP201	4214-132	TERMINAL
776	TP202	4214-132	TERMINAL
776	TP203	4214-132	TERMINAL
776	TP501	4214-132	TERMINAL
776	TP502	4214-132	TERMINAL
776	TP701	4214-132	TERMINAL
807	CN101	4443-0601102	CONNECTOR
814	CN102	4443-00501007	CONNECTOR
814	CN103	4443-00501007	CONNECTOR
786	CN201	4443-04501004	CONNECTOR
787	CN202	4443-04501006	CONNECTOR
788	CN203	4443-04501005	CONNECTOR
808	CN301	4443-0201102	CONNECTOR
810	CN801	4443-05501026	CONNECTOR

PCB-2 FRONT P. C. BOARD**CAPACITORS**

833	C901	5345-106D041	CAP, MINI ELE 10μ/25V
834	C902	5359-S010J103	CAP, PPP .01μ
835	C904	5361-223ZF	CAP, CER .022μ
832	C905	5345-106D041	CAP, MINI ELE 10μ/25V

Ser. No.	Ref. No.	Part No.	Description
832	C906	5345-106D041	CAP, MINI ELE 10 μ 25V
RESISTORS			
841	R901	5135-104522	RES, CBN 1/2P 100K
837	R902	5135-102522	RES, CBN 1/2P 1K
838	R903	5135-183522	RES, CBN 1/2P 18K
839	R904	5135-273522	RES, CBN 1/2P 27K
839	R905	5135-273522	RES, CBN 1/2P 27K
839	R906	5135-273522	RES, CBN 1/2P 27K
839	R907	5135-273522	RES, CBN 1/2P 27K
839	R908	5135-273522	RES, CBN 1/2P 27K
839	R909	5135-273522	RES, CBN 1/2P 27K
836	R910	5135-473522	RES, CBN 1/2P 47K
838	R911	5135-183522	RES, CBN 1/2P 18K
841	R912	5135-104522	RES, CBN 1/2P 100K
841	R913	5135-104522	RES, CBN 1/2P 100K
836	R914	5135-473522	RES, CBN 1/2P 47K
836	R915	5135-473522	RES, CBN 1/2P 47K
840	R916	5135-182522	RES, CBN 1/2P 1.8K
839	R917	5135-273522	RES, CBN 1/2P 27K
838	R918	5135-183522	RES, CBN 1/2P 18K
841	R919	5135-104522	RES, CBN 1/2P 100K
841	R920	5135-104522	RES, CBN 1/2P 100K
837	R921	5135-102522	RES, CBN 1/2P 1K
837	R922	5135-102522	RES, CBN 1/2P 1K
837	R923	5135-102522	RES, CBN 1/2P 1K
837	R924	5135-102522	RES, CBN 1/2P 1K

INTEGRATED CIRCUIT

821	IC901	5654-MN18767J	IC, DIGITAL
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TRANSISTORS

823	Q901	5611-UN4114	XISTOR, PNP R
823	Q902	5611-UN4114	XISTOR, PNP R
823	Q903	5611-UN4114	XISTOR, PNP R
823	Q904	5611-UN4114	XISTOR, PNP R
823	Q905	5611-UN4114	XISTOR, PNP R
824	Q906	5613-3311A(R)	XISTOR, NPN R

DIODES

829	D901	5631-1S2473	DIODE, DET
829	D902	5631-1S2473	DIODE, DET
829	D903	5631-1S2473	DIODE, DET

CONTROLS

742	VR901/902	5109-S0304104	RES, V CBN 100K
746	VR903	5109-S0402502	RES, V CBN 5K

MISCELLANEOUS

812	CN901	4443-00401007	CONNECTOR
812	CN902	4443-00401007	CONNECTOR
809	CN903	4443-05401026	CONNECTOR
827	X901	5693-FC4004A4	OSC, CER
758	FL901	5722-050	TUBE DISPLAY
735	SW901	4437-00604	PUSH SWITCH
735	SW902	4437-00604	PUSH SWITCH
735	SW903	4437-00604	PUSH SWITCH
735	SW904	4437-00604	PUSH SWITCH
735	SW905	4437-00604	PUSH SWITCH
735	SW906	4437-00604	PUSH SWITCH
736	SW907	4437-00603	PUSH SWITCH
733	SW908	4431-S0112306	PUSH SWITCH
733	SW909	4431-S0112306	PUSH SWITCH
733	SW910	4431-S0112306	PUSH SWITCH
735	SW911	4437-00604	PUSH SWITCH
735	SW912	4437-00604	PUSH SWITCH
735	SW913	4437-00604	PUSH SWITCH

PCB-3 DOLBY NR P.C. BOARD**CAPACITORS**

647	C501	5345-105F0951	CAP, MINI ELE 1 μ 50V
647	C502	5345-105F0951	CAP, MINI ELE 1 μ 50V
647	C503	5345-105F0951	CAP, MINI ELE 1 μ 50V
647	C504	5345-105F0951	CAP, MINI ELE 1 μ 50V
654	C507	5359-S010J222	CAP, PPP 2200p
654	C508	5359-S010J222	CAP, PPP 2200p
654	C509	5359-S010J222	CAP, PPP 2200p
654	C510	5359-S010J222	CAP, PPP 2200p
651	C511	5354-564593	CAP, MYL .56 μ
651	C512	5354-564593	CAP, MYL .56 μ
652	C513	5354-334593	CAP, MYL .33 μ
652	C514	5354-334593	CAP, MYL .33 μ
648	C515	5345-106C0951	CAP, MINI ELE 10 μ 16V

Ser. No.	Ref. No.	Part No.	Description
648	C516	5345-106C0951	CAP, MINI ELE 10 μ 16V
649	C517	5345-227C041	CAP, MINI ELE 220 μ 16V
649	C518	5345-227C041	CAP, MINI ELE 220 μ 16V
656	C519	5359-S010J182	CAP, PPP 1800p
656	C520	5359-S010J182	CAP, PPP 1800p
655	C521	5359-S010J222	CAP, PPP 2200p
655	C522	5359-S010J222	CAP, PPP 2200p
648	C525	5345-106C0951	CAP, MINI ELE 10 μ 16V
648	C526	5345-106C0951	CAP, MINI ELE 10 μ 16V
648	C527	5345-106C0951	CAP, MINI ELE 10 μ 16V
648	C528	5345-106C0951	CAP, MINI ELE 10 μ 16V

RESISTORS

664	R503	5135-332522	RES, CBN 1/2P 3.3K
664	R504	5135-332522	RES, CBN 1/2P 3.3K
665	R505	5135-682522	RES, CBN 1/2P 6.8K
665	R506	5135-682522	RES, CBN 1/2P 6.8K
659	R507	5174-S010F243	RES, MTL 1/4 24K
659	R508	5174-S010F243	RES, MTL 1/4 24K
660	R509	5174-S010F561	RES, MTL 1/4 560
660	R510	5174-S010F561	RES, MTL 1/4 560
666	R511	5135-102522	RES, CBN 1/2P 1K
661	R512	5174-S010F273	RES, MTL 1/4 27K
668	R513	5135-105522	RES, CBN 1/2P 1M
668	R514	5135-105522	RES, CBN 1/2P 1M
668	R519	5135-105522	RES, CBN 1/2P 1M
668	R520	5135-105522	RES, CBN 1/2P 1M

INTEGRATED CIRCUIT

641	IC501	5653-CXA1330S	IC, LINEAR
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TRANSISTORS

643	Q501	5613-UN4214	XISTOR, NPN R
643	Q502	5613-UN4214	XISTOR, NPN R
643	Q503	5613-UN4214	XISTOR, NPN R
643	Q504	5613-UN4214	XISTOR, NPN R

MISCELLANEOUS

645	LC501	5214-13701	LC COMPOSITE
645	LC502	5214-13701	LC COMPOSITE
816	CN501	4443-04401005	CONNECTOR
817	CN502	4443-04401004	CONNECTOR
818	CN503	4443-04401006	CONNECTOR

PCB-4 POWER P.C. BOARD**CAPACITOR**

615	△C1	5352-S010M103	CAP, MTL .01 μ BK
615B	△C1	5352-1030961	CAP, MTL .01 μ I IB BB

RESISTOR

042B	△R30	5135-335522	RES, CBN 1/2P 3.3M I IB BB
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TRANSFORMERS

601	△T1	5584-S8201	XFORMER, POWER BK
601B	△T1	5584-S8202	XFORMER, POWER I IB BB

MISCELLANEOUS

731	△SW1	4433-00202	PUSH SWITCH, POWER
041B	△SW2	4411-1047111	ROTARY SWITCH I IB BB
806	CN1	4443-060185	CONNECTOR
777	TM1	4214-122	TERMINAL
777	TM2	4214-122	TERMINAL

ABBREVIATIONS IN PARTS LIST**CAPACITORS**

CAP, MINI ELE	:Electrolytic
CAP, CER	:Ceramic
CAP, PPP	:Polypropylene
CAP, MYL	:Mylar
CAP, MTL	:Metal
CAP, MCA	:Mica
CAP, MINI BP	:Bipolar
CAP, ELE BP	:Electrolytic Bipolar
CAP, STY	:Polystyrene Film
CAP, SPE	:Special
CAP, TAN	:Tantalum

470 μ	:470 μ F
6800p	:6800pF
.047 μ	:0.047 μ F

RESISTORS

RES, CBN 1/6P	:Carbon 1/6W
RES, FUSE	:Fuse
RES, CEM 5P	:Cement 5W
RES, MTL 1P	:Metal 1W
2.2K	:2.2k Ω
220	:220 Ω

TRANSISTORS

XISTOR	:Transistor
FET	:Field Effect Transistor

CONTROLS

RES, V CBN	:Variable-Carbon Resistor
RES, SEMI FIX	:Semi-fixed Resistor

CHASSIS MISCELLANEOUS

761	△P1	4161-71151	CORD W/PLUG BK
761B	△P1	4161-7256	CORD W/PLUG I IB
761F	△P1	4161-04100	CORD W/PLUG BB

Ser. No.	Ref. No.	Part No.	Description
762		4161-71184	CORD W/PLUG
791	JL801	4242-S0326131	JUMPER LEAD

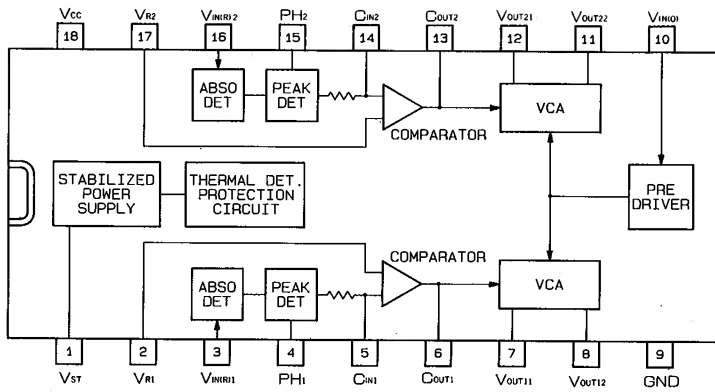
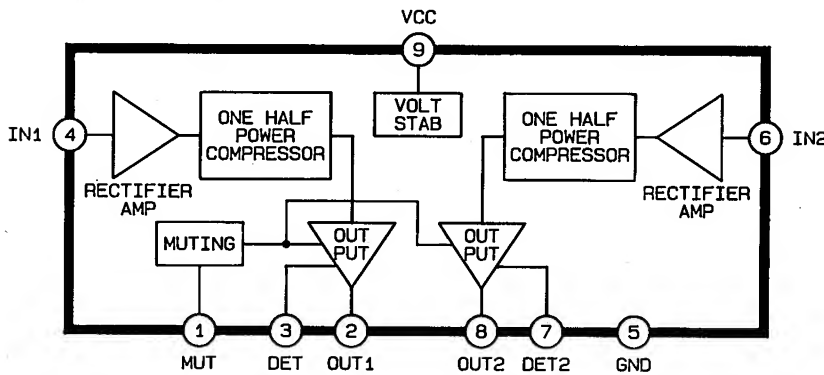
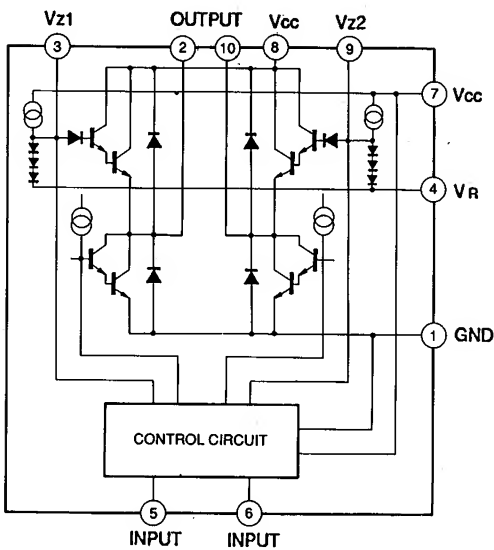
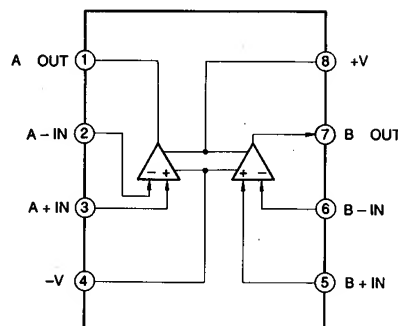
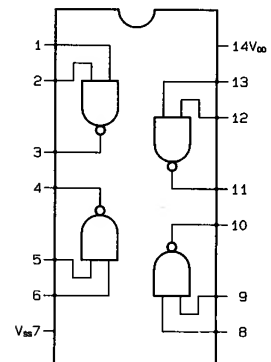
PACKAGE PARTS LIST

021B	1756-06303	LABEL	I IB BB
022B	1756-03124	LABEL	I IB
022F	1756-03111	LABEL	BB
024F	1111-J30319	OWNER GUIDE	BB
106	1111-J30323	OWNER GUIDE	BK BB
106B	1111-J30324	OWNER GUIDE	I IB
107	1113-717004	OWNER CARD	BK
111	1119-047	ATTACH SHEET, WARRANTY	BK
112	1119-0137	ATTACH SHEET, SERVICE AGENCIES	BK
113	1119-01201	ATTACH SHEET, SAFETY	BK
115	1221-28007	CARTON BOX	I
115A	1221-28002	CARTON BOX	BK IB BB
116	1222-7362	CUSHION	
117	1222-7365	CUSHION	
119	1223-R0220055	SOFT SHEET, SET FRONT	
123	1241-R0160600	POLYETHY BAG, SET	
124	1241-R0123350	POLYETHY BAG, OWNER GUIDE	

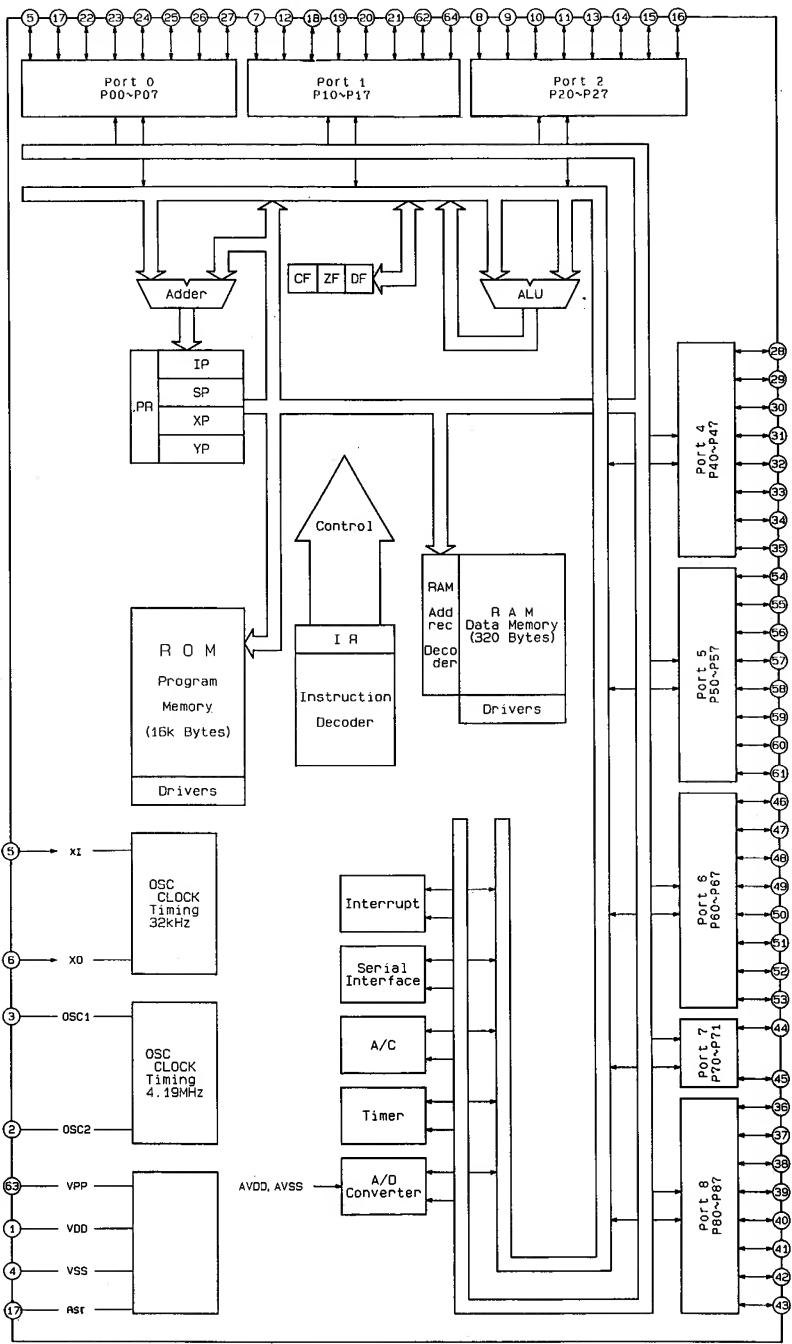
NOTE

SAFETY RELATED COMPONENT. USE ONLY EXACT REPLACEMENT PART AS SPECIFIED.

IC BLOCK DIAGRAM

IC301 : μ PC1297CA
 Dolby HX Pro

IC401 : BA6138
 Signal Level Meter

IC801 : BA6229
 Motor Driver

IC751 : NJM4558D
 OP-Amp.

IC701 : TC4011BP
 2-Input NAND Gate


IC901 : MN187167J
Logic Controller

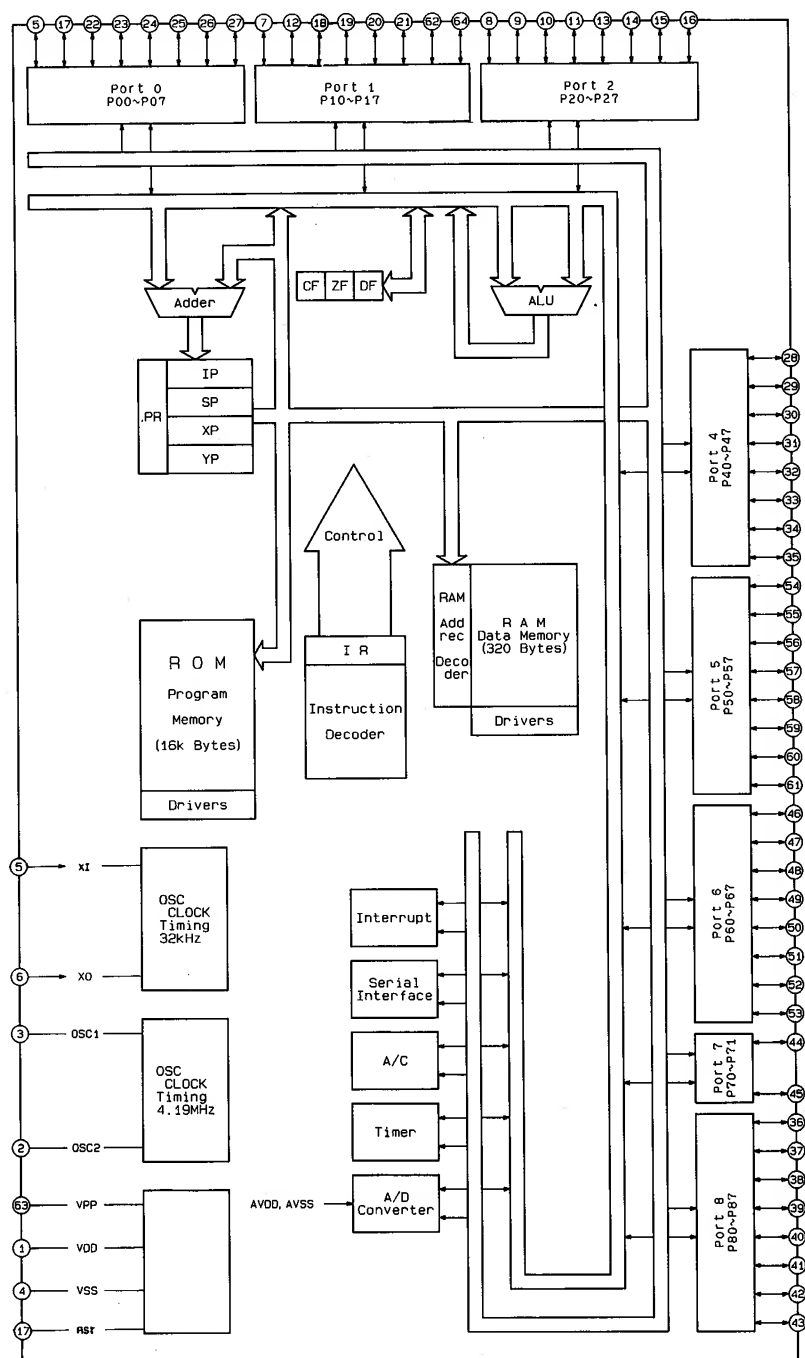


TERMINAL FUNCTIONS

Pin No.	Port name	Function name	I/O	Outline of functions
5	P06	XI	I	Initial setting switch. Hight level=ON
6	XO	XO	O	
7	P17	AVdd	I	D/A converter standard voltage(DC 5V).
8	P27	AD7	I	Key input terminal.
9	P26	AD6	I	Key input terminal.
10	P25	AD5	I	Key input terminal.
11	P24	AD4	I	Key input terminal.
12	P16	AVss		GND terminal.
13	P23	AD3	I	Key input terminal.
14	P22	AD2	I	A/D input port for LEVEL METER indication.
15	P21	AD1	I	A/D input port for LEVEL METER indication.
16	P20	AD0	I	A/D input port for music search.
17	P07	RST	I	Reset input.
18	1RQ1	R-SI	I	Remote control input.
19	1RQφ	VOLT DN	I	Power on/off detection terminal. Low level=OFF
20	P13	DOLBY-B	I	Input port to switch DOLBY display.
21	P12	DOLBY-C	I	Input port to switch DOLBY display.
22	P05	IND.CONT	O	High level on stand-by or display off and after power off.
23	P04	MONITOR	O	High level on MONITOR mode. Low level on SOURCE mode.
24	P03	REC	O	REC/PLAY switching terminal. High level on REC.
25	P02	BIAS	O	BIAS control terminal. High level=BIAS ON
26	P01	REC MUTE	O	Recording amp. muting terminal. High level=MUTING ON
27	P00	PB MUTE	O	Playback amp. muting terminal. High level=MUTING ON
28	P47	LINE MUTE	O	Line muting terminal. High level=MUTING ON
29	P46	RM1	O	Reel motor control. High level=active
30	P45	RM2	O	Reel motor control. High level=active
31	P44	RPC	O	Reel motor power control. High level=power down
32	P43	CPM	O	Capstan motor control.

NOTE: Low level=0V
High level=5.1V

IC901 : MN187167J
Logic Controller



TERMINAL FUNCTIONS

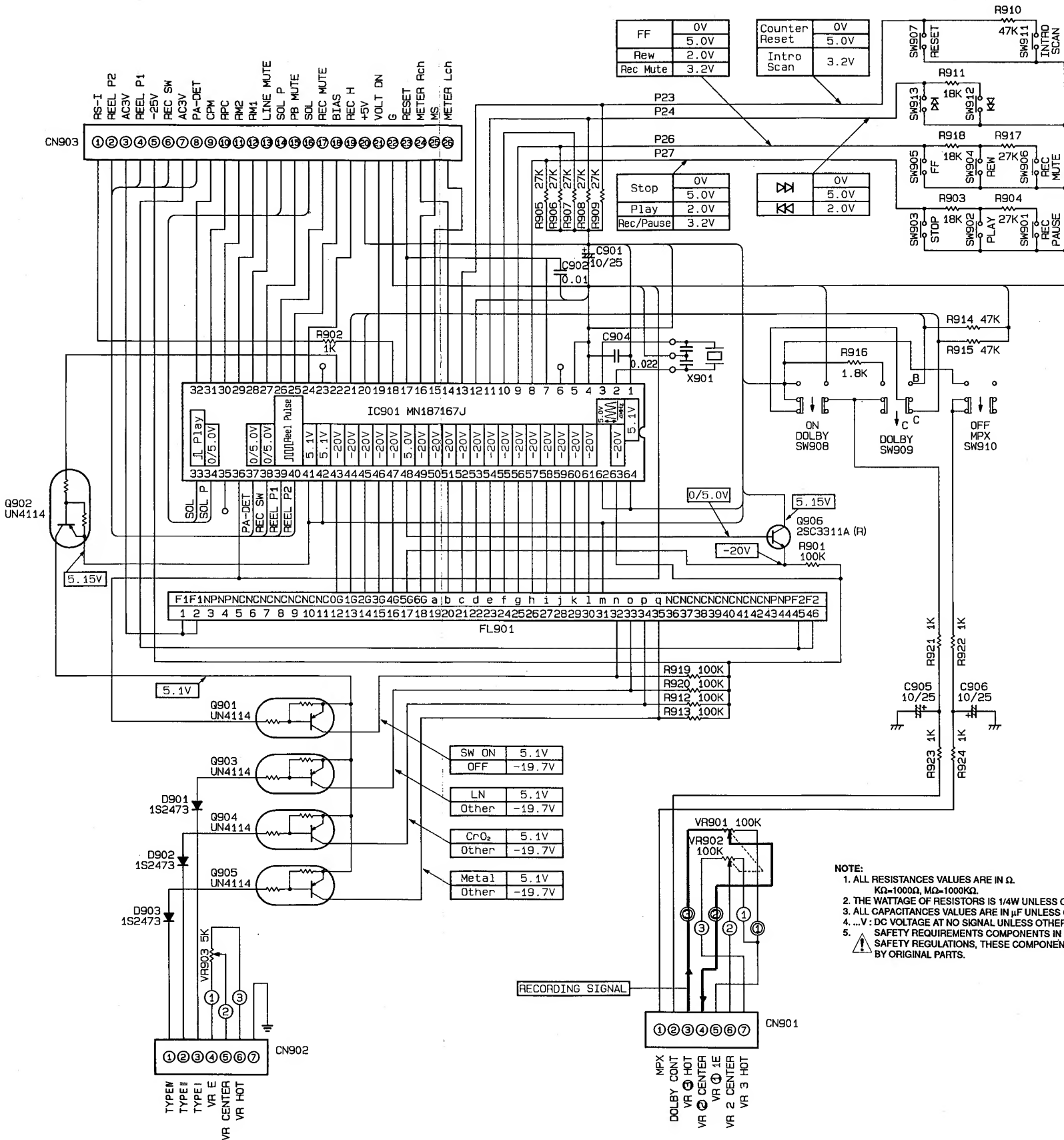
Pin No.	Port name	Function name	I/O	Outline of functions
5	P06	XI	I	Initial setting switch. High level=ON
6	XO	XO	O	
7	P17	AVdd	I	D/A converter standard voltage(DC 5V).
8	P27	AD7	I	Key input terminal.
9	P26	AD6	I	Key input terminal.
10	P25	AD5	I	Key input terminal.
11	P24	AD4	I	Key input terminal.
12	P16	AVss		GND terminal.
13	P23	AD3	I	Key input terminal.
14	P22	AD2	I	A/D input port for LEVEL METER indication.
15	P21	AD1	I	A/D input port for LEVEL METER indication.
16	P20	AD0	I	A/D input port for music search.
17	P07	RST	I	Reset input.
18	1RQ1	R-SI	I	Remote control input.
19	1RQ ϕ	VOLT DN	I	Power on/off detection terminal. Low level=OFF
20	P13	DOLBY-B	I	Input port to switch DOLBY display.
21	P12	DOLBY-C	I	Input port to switch DOLBY display.
22	P05	IND.CONT	O	High level on stand-by or display off and after power off.
23	P04	MONITOR	O	High level on MONITOR mode. Low level on SOURCE mode.
24	P03	REC	O	REC/PLAY switching terminal. High level on REC.
25	P02	BIAS	O	BIAS control terminal. High level=BIAS ON
26	P01	REC MUTE	O	Recording amp. muting terminal. High level=MUTING ON
27	P00	PB MUTE	O	Playback amp. muting terminal. High level=MUTING ON
28	P47	LINE MUTE	O	Line muting terminal. High level=MUTING ON
29	P46	RM1	O	Reel motor control. High level=active
30	P45	RM2	O	Reel motor control. High level=active
31	P44	RPC	O	Reel motor power control. High level=power down
32	P43	CPM	O	Capstan motor control.

NOTE: Low level=0V

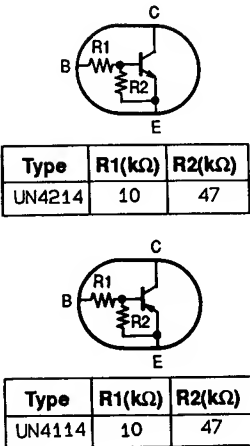
High level=5.1V

SCHEMATIC DIAGRAM (1)

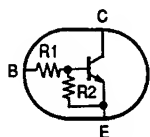
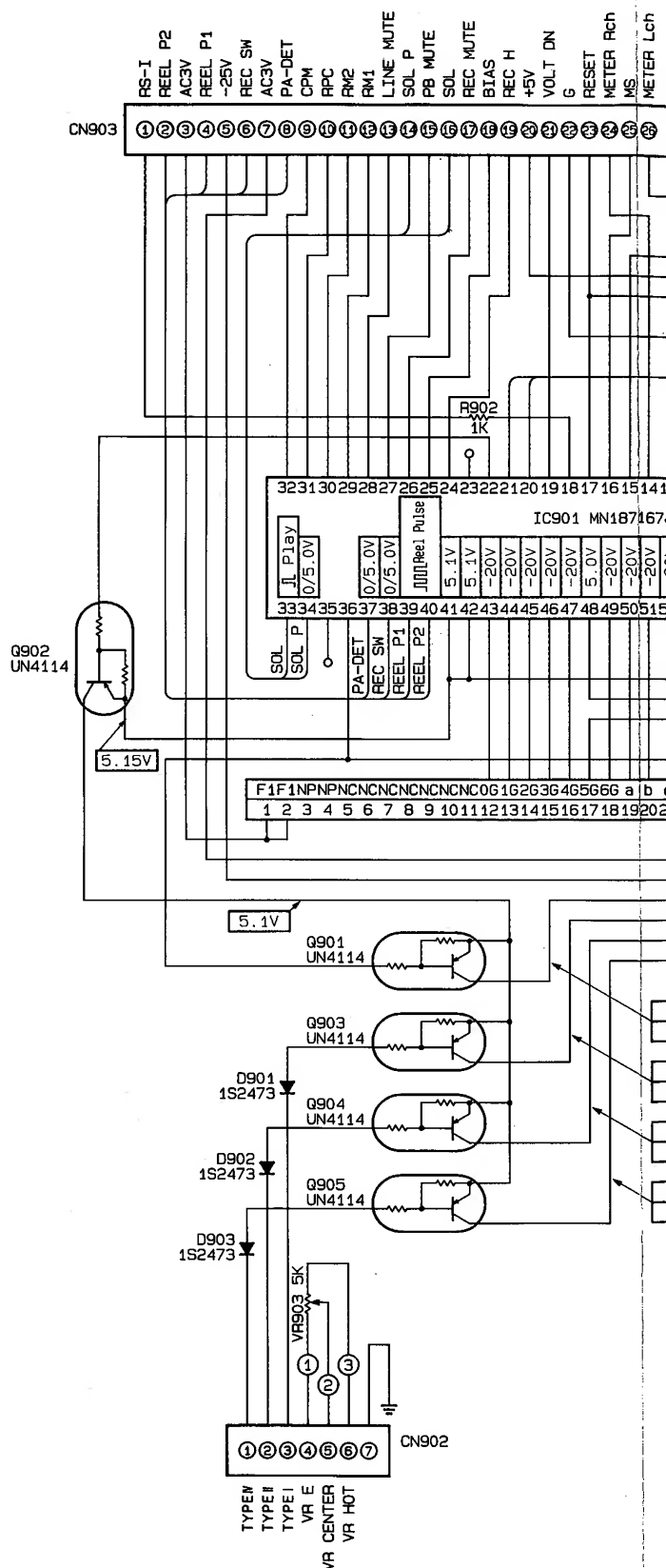
PCB-2 Front P. C. Board



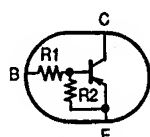
NOTE:
1. ALL RESISTANCES VALUES ARE IN Ω .
2. THE WATTAGE OF RESISTORS IS 1/4W UNLESS OTHERWISE NOTED.
3. ALL CAPACITANCES VALUES ARE IN μF UNLESS OTHERWISE NOTED. P= μF .
4. ...V : DC VOLTAGE AT NO SIGNAL UNLESS OTHERWISE NOTED.
5. SAFETY REQUIREMENTS COMPONENTS IN ACCORDANCE WITH PRESENT SAFETY REGULATIONS, THESE COMPONENTS MUST ONLY BE REPLACED BY ORIGINAL PARTS.



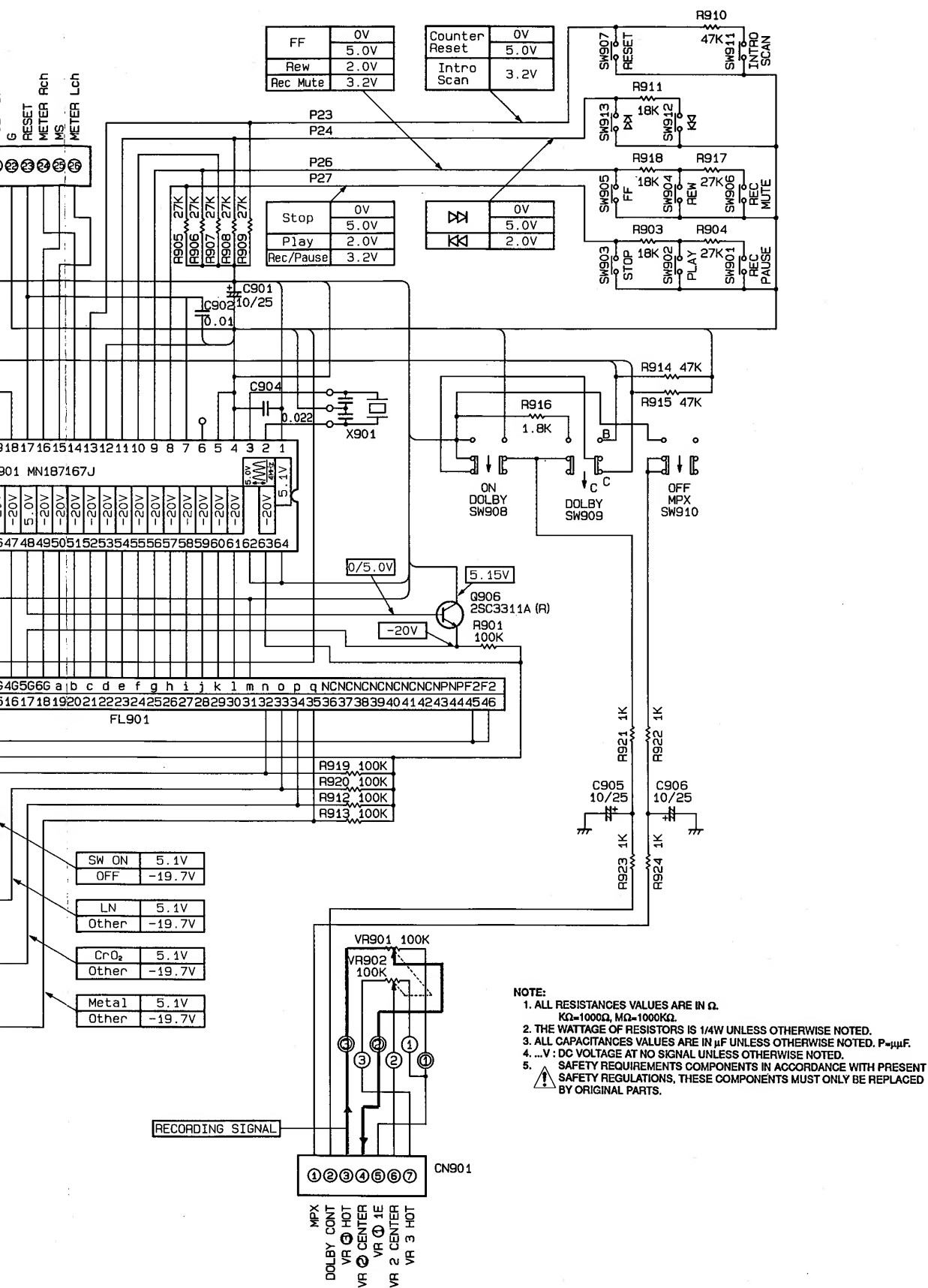
PCB-2 Front P. C. Board



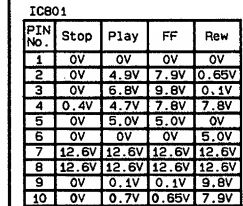
Type	R1(k Ω)	R2(k Ω)
UN4214	10	47



Type	R1(k Ω)	R2(k Ω)
UN4114	10	47



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